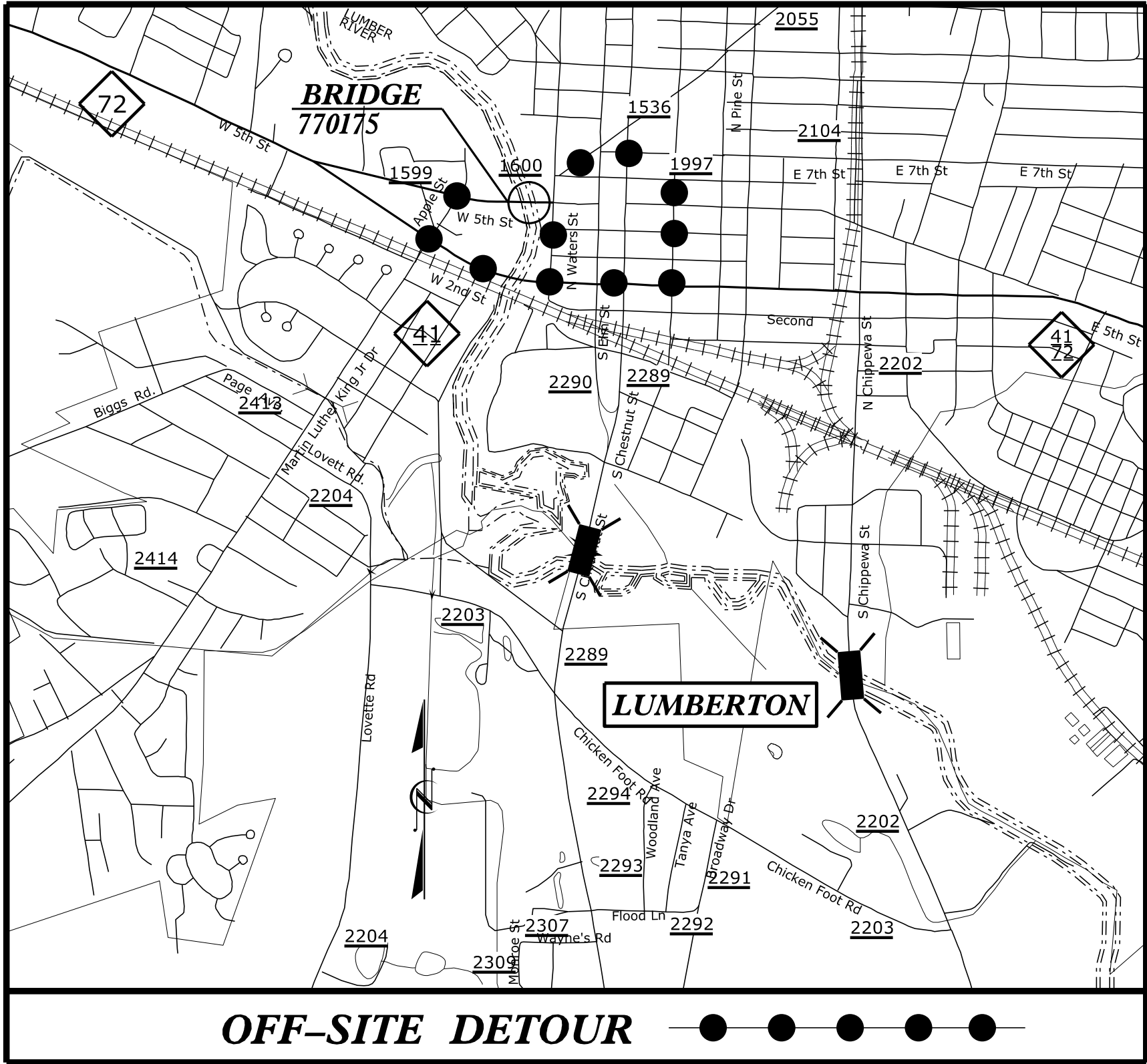


PROJECT: B-5985B

CONTRACT: C205069



OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROBESON COUNTY

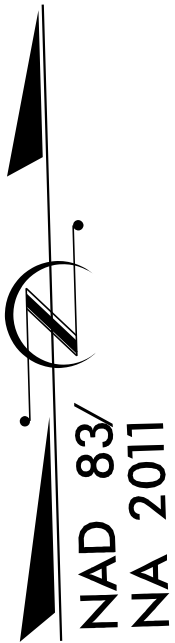
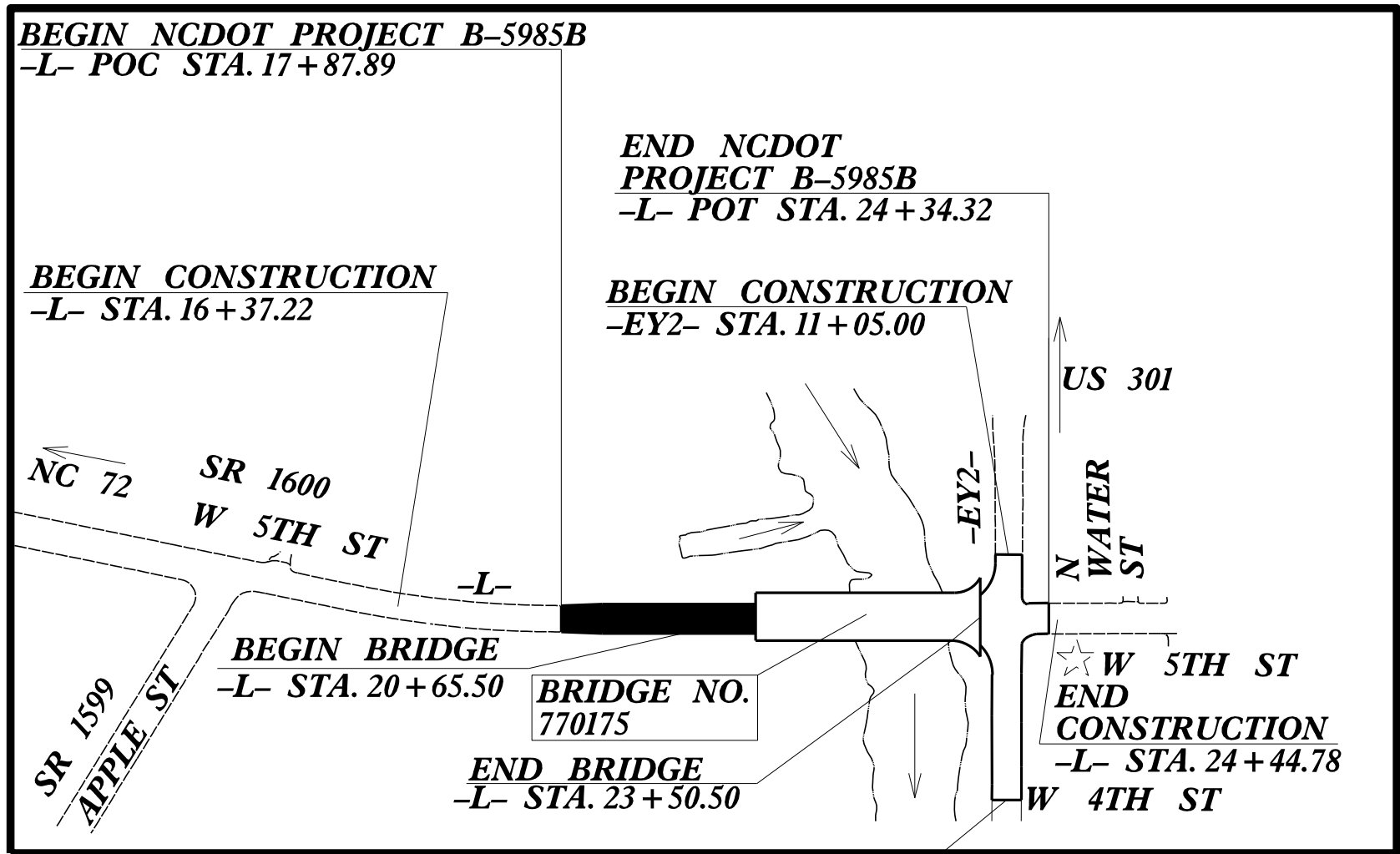
LOCATION: BRIDGE NO. 770175 OVER LUMBER RIVER ON SR 1600

TYPE OF WORK: GRADING, DRAINAGE, SIGNALS, PAVING & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5985B		
STATE PROJ.NO.	F.A.PROJ.NO.	DESCRIPTION	
47749.1.3	4774902	PE	
47749.2.5		ROW	
47749.2.6		UTILITY	
47749.3.3	4774902	CONST.	
		1223 Jones Franklin Rd. Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107	
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION			

BRIDGE # 770175

STRUCTURE PLANS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

BRIDGE # 770175
ADT 2025 = 11,100
ADT 2042 = 14,800
K = 11 %
D = 55 %
T = 3 % *
V = 40 MPH

* (TTST =1% +
DUAL =2%)
FUNC CLASS =
MAJOR COLLECTOR
SUB-REGIONAL TIER

PROJECT LENGTH

BRIDGE # 770175
LENGTH ROADWAY PROJECT B-5985B = 0.068 MILES
LENGTH STRUCTURE PROJECT B-5985B =0.054 MILES
TOTAL LENGTH PROJECT B-5985B = 0.122 MILES
NCDOT CONTACT: DAVID STUTTS, PE
PROJECT ENGINEER - PEEPROGRAM MGT.

Prepared for:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DRIVE RALEIGH NC, 27610

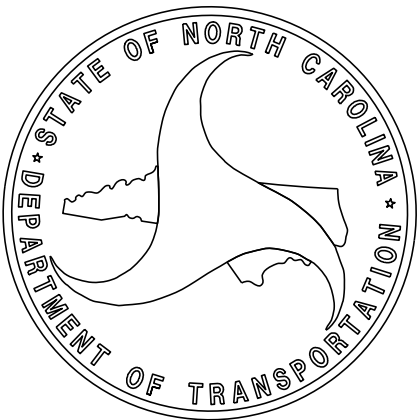
2024 STANDARD SPECIFICATIONS

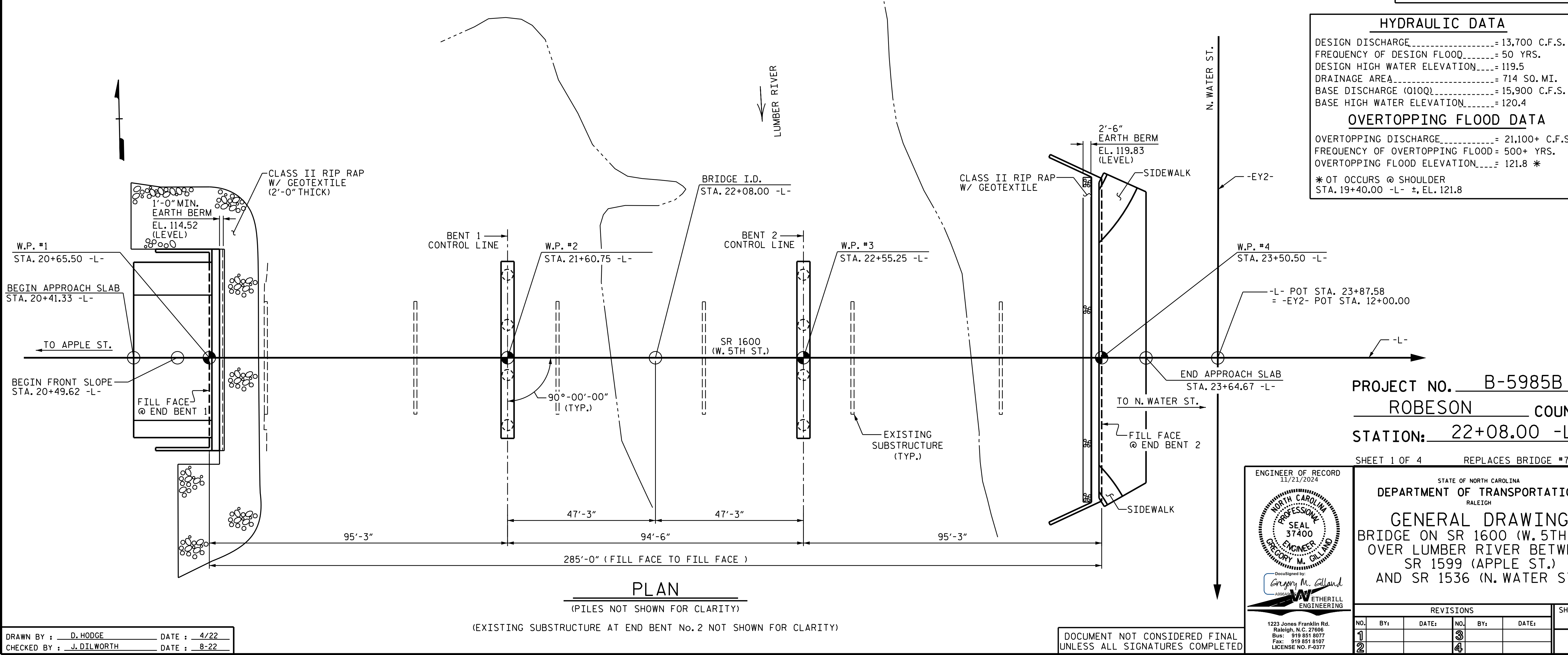
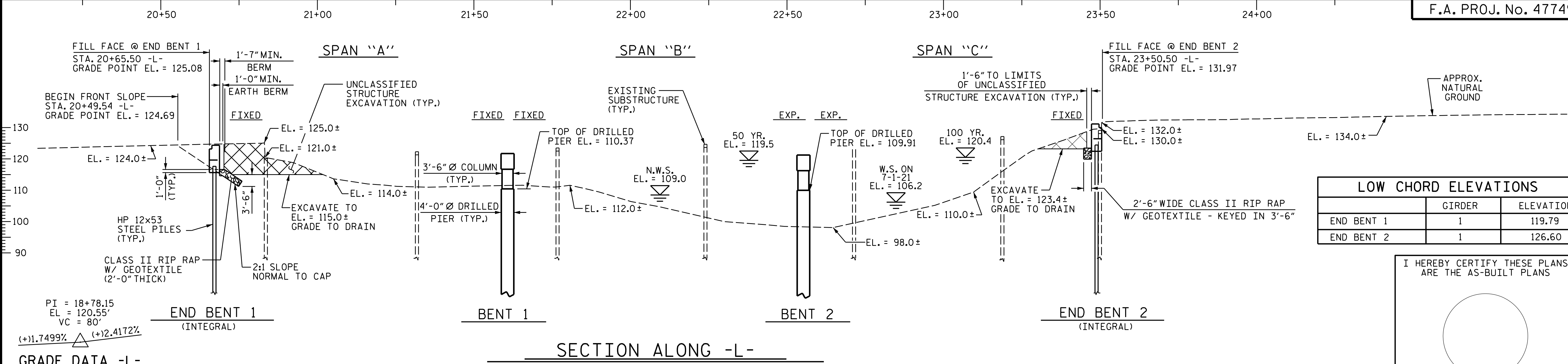
RIGHT OF WAY DATE:
JANUARY 27, 2022

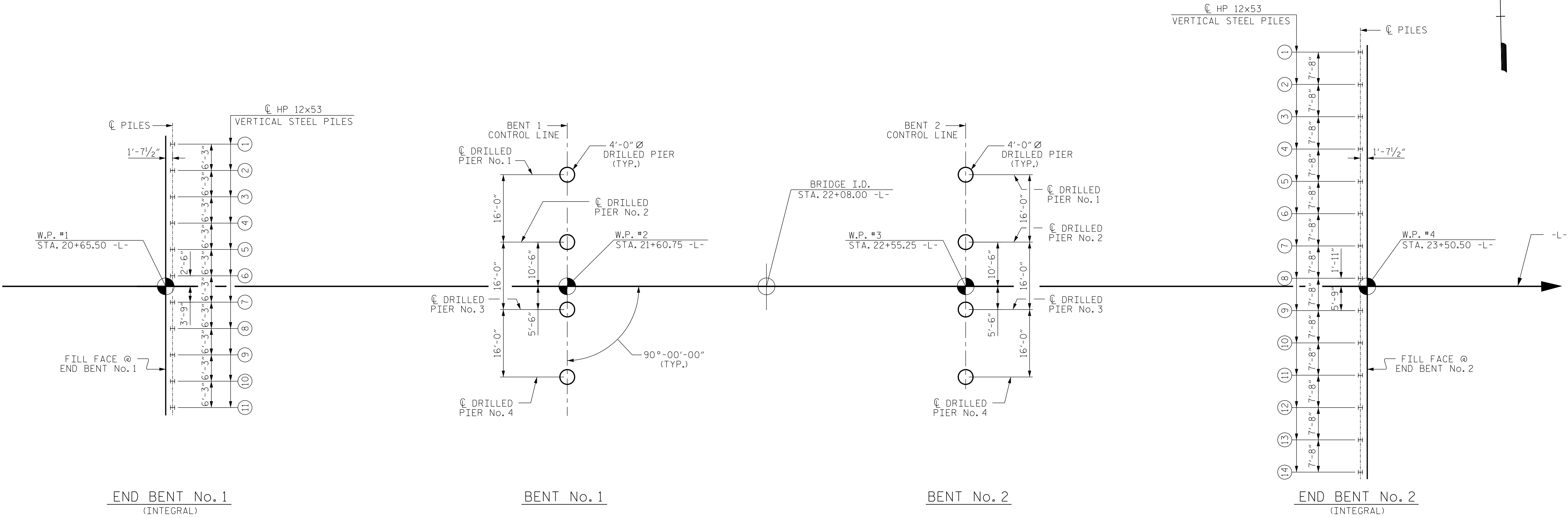
LETTING DATE:
NOVEMBER 18, 2025

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

JOHN A DILWORTH, PE
PROJECT DESIGN ENGINEER







FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 70 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.1 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 97 FT.

DO NOT DEWATER DRILLED PIER EXCAVATIONS AT BENT NO.1. CLEAN THE BOTTOM OF EXCAVATIONS WITH A SUBMERSIBLE PUMP OR AN AIRLIFT. WET PLACEMENT OF CONCRETE IS REQUIRED.

SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO.1.

INSTALL PERMANENT STEEL CASINGS AT BENT NO.2 BY VIBRATING, SCREWING OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW ELEVATION 83 FT.

DO NOT DEWATER DRILLED PIER EXCAVATIONS AT BENT NO.2. CLEAN THE BOTTOM OF EXCAVATIONS WITH A SUBMERSIBLE PUMP OR AN AIRLIFT. WET PLACEMENT OF CONCRETE IS REQUIRED.

SLURRY CONSTRUCTION IS REQUIRED FOR DRILLED PIERS AT BENT NO.2.

REMOVE ALL DEBRIS AND REMNANTS OF PREVIOUS STRUCTURES.

UPON REMOVAL OF EXISTING END BENT 2 CAP, THE EXACT LOCATIONS OF THE EXISTING PILES SHALL BE SURVEYED AND VERIFIED BY THE ENGINEER TO ENSURE THERE IS NO CONFLICTS WITH THE LOCATIONS OF THE PROPOSED PILES. REMOVE THE SUBSTRUCTURE AS NECESSARY TO AVOID INTERFERENCE WITH CONSTRUCTION OF THE PROPOSED STRUCTURE.

REFER TO PILE AND DRILLED PIER FOUNDATION TABLES (SHEET 3 OF 4).

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 4

DRAWN BY : J. PENDERCRAFT DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
1/31/2025

NORTH CAROLINA
PROFESSIONAL
SEAL
37400
ENGINEER
GREGORY M. GILLAND

DocuSigned by:

GREGORY M. GILLAND
ETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1600 (W. 5TH ST.)
OVER LUMBER RIVER BETWEEN
SR 1599 (APPLE ST.)
AND SR 1536 (N. WATER ST.)

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-02
TOTAL SHEETS
64

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent 1, Piles 1-11	11	230	118.00	70			310	6						
End Bent 2, Piles 1-14	14	200	124.00	65			270	7						
TOTAL QUANTITY:								13						

* $RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$

** Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent 1, Piles 1-11	228			0.75		1
End Bent 2, Piles 1-14	192			0.75		1

* Factored Dead Load is factored weight of pile above the ground line.

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-11				
End Bent 2, Piles 1-14				
TOTAL QUANTITY:				

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
End Bent 1	75	1
End Bent 2	70	1
TOTAL QUANTITY:		2

Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT

* EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Number of Piers per Line	Factored Resistance per Pier KIPS	Required Drilled Pier Tip Elevation FT	Required Tip Resistance per Pier KSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier LIN FT	Drilled Pier Length* per Pier LIN FT	Drilled Pier Length Not In Soil* per Pier LIN FT	Drilled Pier Length In Soil* per Pier LIN FT	Permanent Steel Casing Required? YES	Permanent Steel Casing Tip Elevation (Elevation Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier LIN FT
Bent 1, Piers 1-4	4	1020	-4.00	20	94.00		114.5			Yes	92.00	18
Bent 2, Piers 1-4	4	1020	-4.00	10	80.00		114			Yes	78.00	32
TOTAL QUANTITY:							914.0					200

* Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "48" Dia. Drilled Piers" or "48" Dia. Drilled Piers Not in Soil" and "48" Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "48" Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for 48" Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) EACH	Crosshole Sonic Logging (CSL) EACH	Thermal Integrity Profiler (TIP) EACH	Shaft Inspection Device (SID) EACH	Pile Integrity Test (PIT) EACH
Bent 1, Piers 1-4	1	1		1	
Bent 2, Piers 1-4	1	1		1	
TOTAL QUANTITY:	2	2		2	

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Yinhui Liu, #034020) on 01-30-2025.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
- The Engineer may adjust the quantity for DPT Testing, Pipe Pile Plates, Permanent Steel Casing, SPTs, TIPs, CSL Testing, SID Inspections and PITs when necessary.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 4

DRAWN BY : J. PENDERGRAFT DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
1/31/2025



Designed by:

Gregory M. Gilland
ABR
WETHERILL
ENGINEERING

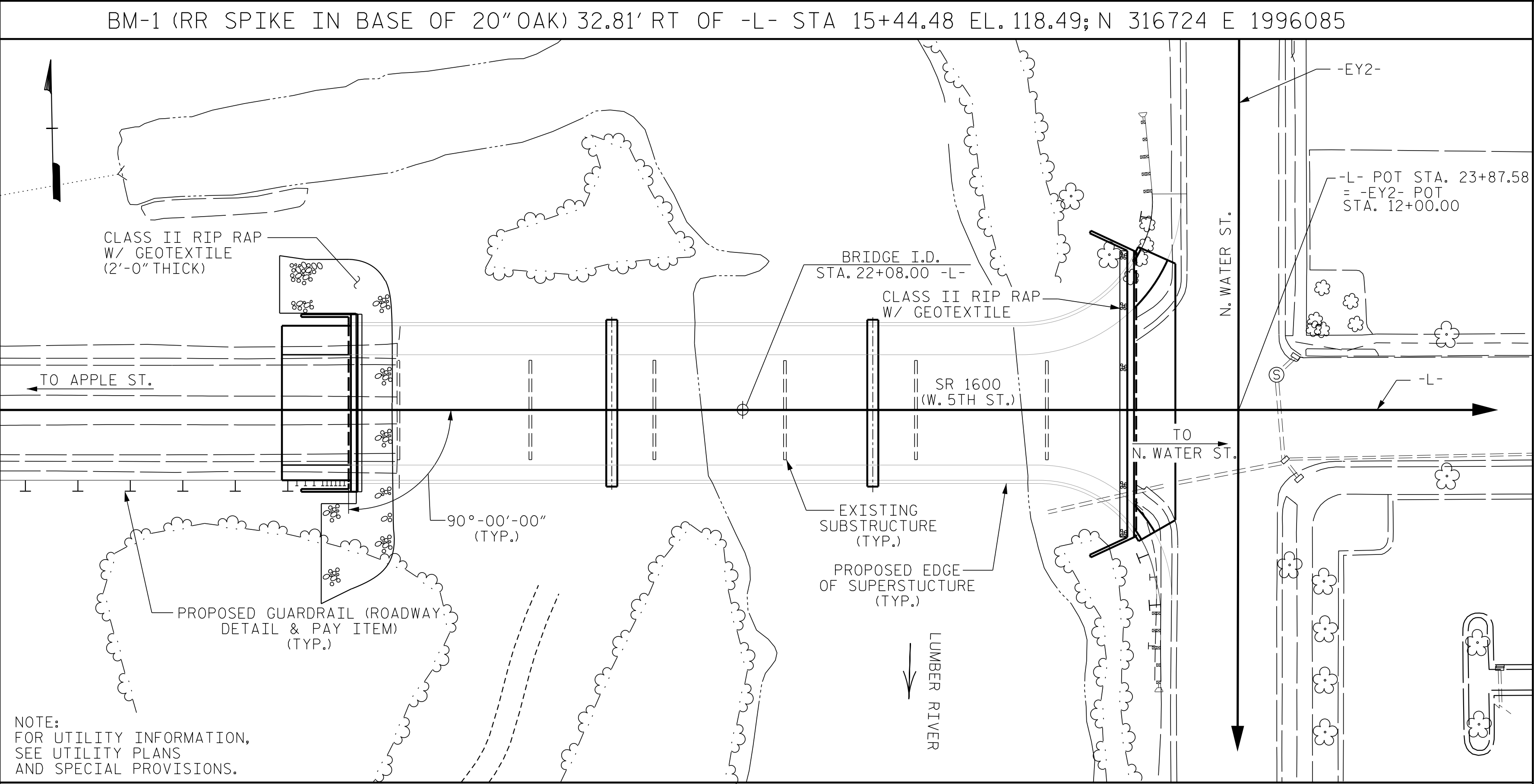
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
PILE AND
DRILLED PIER
FOUNDATION
TABLES

REVISIONS						SHEET NO. S-03
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

P:\2018\SMU Bridge Replacement Program\B-5985B\Structures\PDF of Submittals\Revision for Addendum 1 (Removal of work bridge Note) 11-10-25\402-001_B-5985-SITE 2 T70175-SMU_GD.dgn 11/10/2025 2:14:48 PM



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

FOR ELECTRICAL CONDUIT SYSTEM AND ELECTRICAL CONDUIT FOR SIGNALS, SEE ELECTRICAL CONDUIT PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE EXISTING 6 SPAN STRUCTURE CONSISTS OF 1 @ 47.25', 3 @ 47.5', 1 @ 47.75', AND 1 @ 30.25' WITH REINFORCED CONCRETE DECK ON I-BEAMS AND A CLEAR ROADWAY WIDTH OF 36.08' ON A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAPS ON PPC PILES SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMITS. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S2-01 SHALL BE EXCAVATED FOR A DISTANCE OF 45 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 22+08.00 -L-, SEE SPECIAL PROVISIONS.

AT NO TIME IS THE TEMPORARY ACCESS PERMITTED TO OBSTRUCT MORE THAN 50% OF THE STREAM FLOW.

TEMPORARY WORK BRIDGE SHALL BE ILLUMINATED AT NIGHT WITH BLINKING YELLOW LIGHTS AS WELL AS REFLECTIVE SIGNAGE POSTED ON THE UPSTREAM/DOWNSTREA/LEFT/RIGHT CHANNEL FOR PUBLIC NAVIGATION SAFETY.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION STA. 22+08.00-L-".

TOTAL BILL OF MATERIAL													
	CONSTRUCTION, MAINTANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	4'-0" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM
SUPERSTRUCTURE	LUMP SUM	LUMP SUM	LUMP SUM						LUMP SUM	17,131	12,895		LUMP SUM
END BENT 1												55.2	
BENT 1				458.00	72	1	1	1				55.4	
BENT 2				456.00	128	1	1	1				59.3	
END BENT 2												60.0	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	914.00	200	2	2	2	LUMP SUM	17,131	12,895	229.9	LUMP SUM

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPICE LENGTHS AND $f_y = 60\text{ksi}$.

TOTAL BILL OF MATERIAL																	
	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	FIB 45" PRESTRESSED CONCRETE GIRDERS		APPROX. 15,800LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 x 53 STEEL PILES		PILE REDRIVES	DYNAMIC PILE TESTING	CLASSIC CONCRETE BRIDGE RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	ELECTRICAL CONDUIT SYSTEM	ELECTRICAL CONDUIT FOR SIGNALS
	LBS.	LBS.	No.	LIN.FT.	LUMP SUM	EA.	NO.	LIN.FT.	EA.	EACH	LIN.FT.	TON	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			24	2,260.00	LUMP SUM						591.01			LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1	8,380					11	11	770	6	1		314	349				
BENT 1	37,479	12,370															
BENT 2	38,021	12,768															
END BENT 2	10,080					14	14	910	7	1		46	105				
TOTAL	93,960	25,138	24	2,260.00	LUMP SUM	25	25	1,680	13	2	591.01	360	454	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM

DRAWN BY : J. PENDERGRAFT DATE : 8-22
CHECKED BY : JAD / GMG DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 4 OF 4

ENGINEER OF RECORD
11/10/2025

DocuSigned by:

GREGORY M. GILLAND
APPROVED

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1600 (W. 5TH ST.)
OVER LUMBER RIVER BETWEEN
SR 1599 (APPLE ST.)
AND SR 1536 (N. WATER ST.)

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-04
TOTAL SHEETS
64

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

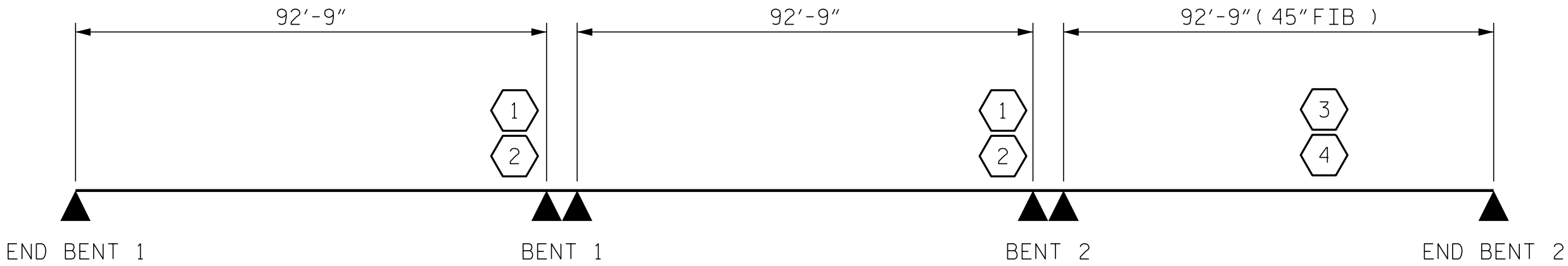
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
4	EMERGENCY VEHICLE LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-



LRFR SUMMARY

(45"FLORIDA I-BEAM CONTROLS RATING; W36x135 RATING EXCEEDS PRESTRESSED GIRDER)
(CONTROLLING GIRDER BEARING TO BEARING LENGTH SHOWN)

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																										
LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER			
							LIVE-LOAD FACTORS (γ _{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ _{LL})	MOMENT							
								DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)		
DESIGN LOAD		HL-93 (INVENTORY)	N/A	①	1.06	--	1.75	0.764	1.41	A&B	EL	46.38	0.764	1.06	A&B	EL	84.04	0.80	0.764	1.10	C	EL	55.79			
		HL-93 (OPERATING)	N/A		1.40	--	1.35	0.764	1.83	A&B	EL	46.38	0.764	1.40	A&B	EL	84.04	N/A	--	--	--	--	--			
		HS-20 (INVENTORY)	36.000	②	1.43	51.480	1.75	0.764	1.94	A&B	EL	46.38	0.764	1.43	A&B	EL	84.04	0.80	0.764	1.50	C	EL	55.79			
		HS-20 (OPERATING)	36.000		1.88	67.680	1.35	0.764	2.51	A&B	EL	46.38	0.764	1.88	A&B	EL	84.04	N/A	--	--	--	--	--			
LEGAL LOAD		SINGLE VEHICLE (SV)		SNSH	13.500		3.55	47.925	1.40	0.764	5.70	A&B	EL	46.38	0.777	4.58	C	I	84.04	0.80	0.764	3.55	C	EL	55.79	
				SNGARBS2	20.000		2.55	51.000	1.40	0.764	4.15	A&B	EL	46.38	0.777	3.19	C	I	84.04	0.80	0.764	2.55	C	EL	55.79	
				SNAGRIS2	22.000		2.38	52.360	1.40	0.764	3.89	A&B	EL	46.38	0.777	2.93	C	I	84.04	0.80	0.764	2.38	C	EL	55.79	
				SNCOTTS3	27.250		1.78	48.505	1.40	0.764	2.83	A&B	EL	46.38	0.777	2.23	C	I	84.04	0.80	0.764	1.78	C	EL	55.79	
				SNAGGRS4	34.925		1.45	50.641	1.40	0.764	2.33	A&B	EL	46.38	0.777	1.81	C	I	84.04	0.80	0.764	1.45	C	EL	55.79	
				SNS5A	35.550		1.43	50.837	1.40	0.764	2.28	A&B	EL	46.38	0.777	1.82	C	I	84.04	0.80	0.764	1.43	C	EL	55.79	
				SNS6A	39.950		1.30	51.935	1.40	0.764	2.08	A&B	EL	46.38	0.777	1.64	C	I	84.04	0.80	0.764	1.30	C	EL	55.79	
				SNS7B	42.000		1.24	52.080	1.40	0.764	1.98	A&B	EL	46.38	0.777	1.59	C	I	84.04	0.80	0.764	1.24	C	EL	55.79	
		TRUCK TRACTOR SEMI-TRAILER (TTST)		TNAGRIT3	33.000		1.60	52.800	1.40	0.764	2.53	A&B	EL	46.38	0.777	1.98	C	I	84.04	0.80	0.764	1.60	C	EL	55.79	
				TNT4A	33.075		1.57	51.928	1.40	0.764	2.54	A&B	EL	46.38	0.777	1.94	C	I	84.04	0.80	0.764	1.57	C	EL	55.79	
				TNT6A	41.600		1.29	53.664	1.40	0.764	2.06	A&B	EL	46.38	0.777	1.68	C	I	84.04	0.80	0.764	1.29	C	EL	55.79	
				TNT7A	42.000		1.28	53.760	1.40	0.764	2.06	A&B	EL	46.38	0.777	1.65	C	I	84.04	0.80	0.764	1.28	C	EL	55.79	
				TNT7B	42.000		1.29	54.180	1.40	0.764	2.11	A&B	EL	46.38	0.777	1.56	C	I	84.04	0.80	0.764	1.29	C	EL	55.79	
				TNAGRIT4	43.000		1.25	53.750	1.40	0.764	2.02	A&B	EL	46.38	0.764	1.51	A&B	EL	84.04	0.80	0.764	1.25	C	EL	55.79	
		TNAGT5A	45.000		1.20	54.000	1.40	0.764	1.92	A&B	EL	46.38	0.764	1.49	A&B	EL	84.04	0.80	0.764	1.20	C	EL	55.79			
		TNAGT5B	45.000	③	1.18	53.100	1.40	0.764	1.90	A&B	EL	46.38	0.764	1.44	A&B	EL	8.71	0.80	0.764	1.18	C	EL	55.79			
EMERGENCY VEHICLE (EV)		EV2	28.750		1.79	51.460	1.30	0.764	3.15	A&B	EL	46.38	0.764	2.38	A&B	EL	8.71	0.80	0.764	1.79	C	EL	55.79			
		EV3	43.000	④	1.20	51.600	1.30	0.764	2.07	A&B	EL	46.38	0.764	1.56	A&B	EL	8.71	0.80	0.764	1.20	C	EL	55.79			

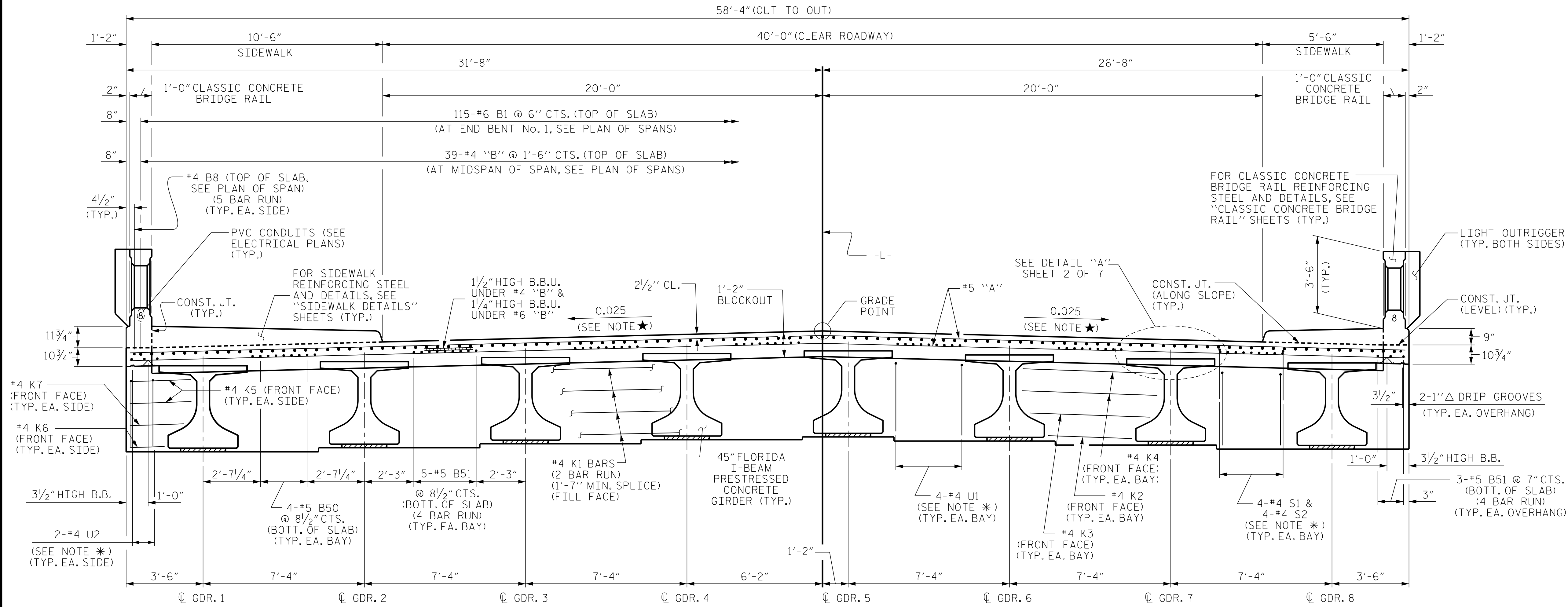
ASSEMBLED BY: T. DIFFEE/DAH	DATE: 8-22
CHECKED BY: G. GILLAND	DATE: 9-22
DRAWN BY: MAA 1/08	REV. 11/12/08RR
CHECKED BY: GM/DI 2/08	REV. 10/11/11
	REV. 04/23
	MAA/GM
	MAA/GM
	BNB/AAI

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD 8/20/2024  Designed by:  Approved by:  1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)						REVISIONS			SHEET NO. S-05	
NO.		BY:	DATE:	NO.		BY:	DATE:				TOTAL SHEETS 64	
1				3								
2				4								

STD. NO. LRFR1

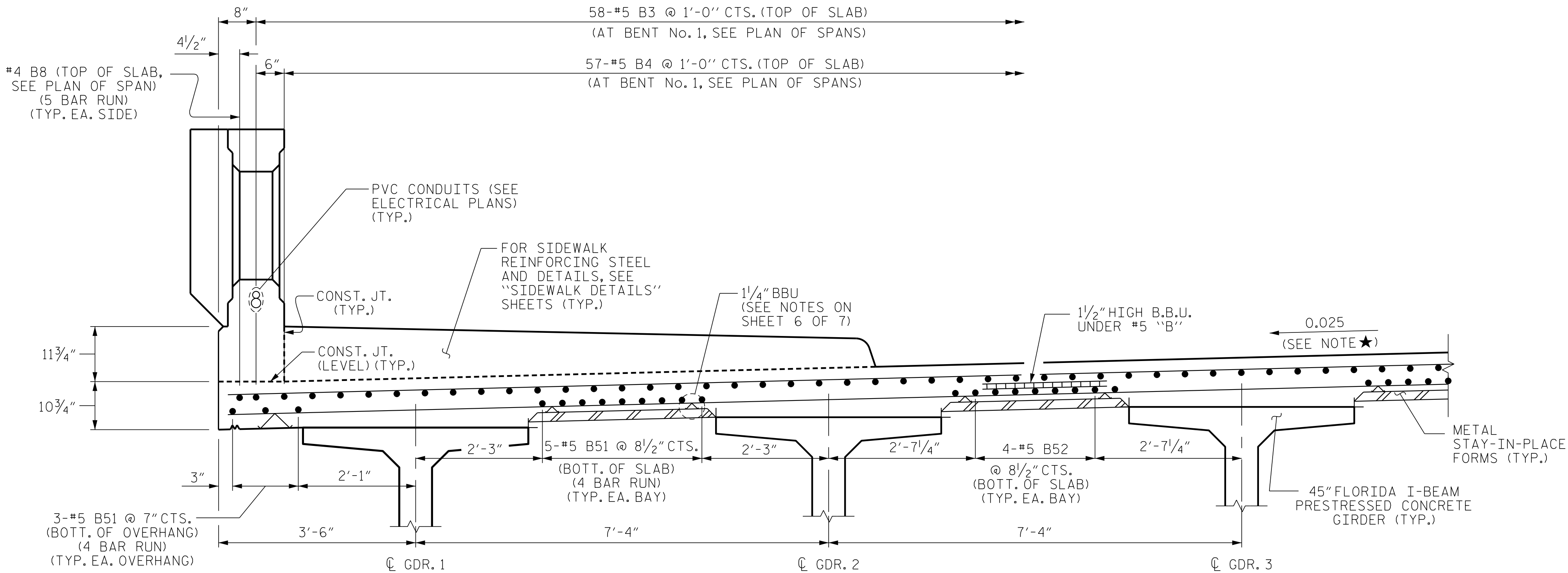
PA:2018\18156.01_B-5985_RobesonStructuresStr-2 (770175)NDGN402_001_B-5985-SITE 2 770175_SKU-T_Sdgn
4/26/2024 7:10:37 AM



TYPICAL SECTION
(SHOWING INTEGRAL END BENT No.1 DIAPHRAGM)

NOTE *
THESE BARS ARE TO MATCH
#4 "V" BARS IN END BENT

NOTE ★
CROSS-SLOPE SHOWN IS TYPICAL
EXCEPT ON APPROACH SLAB AT END
BENT No. 2, WHICH VARIES. SEE
"BRIDGE APPROACH SLAB" SHEETS
FOR DETAILS.



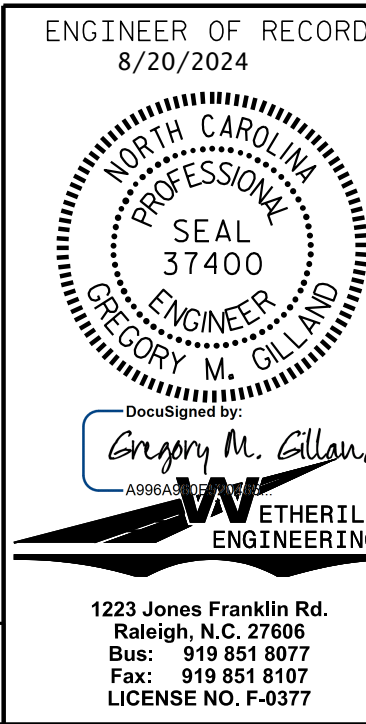
TYPICAL PARTIAL SECTION THRU LINK SLAB @ BENT No.1

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 1 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

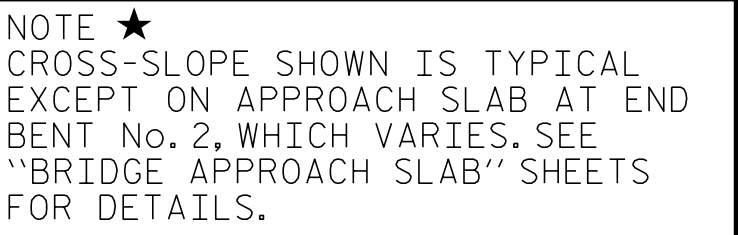
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-06
2			4			TOTAL SHEETS 64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: D. HODGE DATE: 2/22
CHECKED BY: G. GILLAND DATE: 7/22

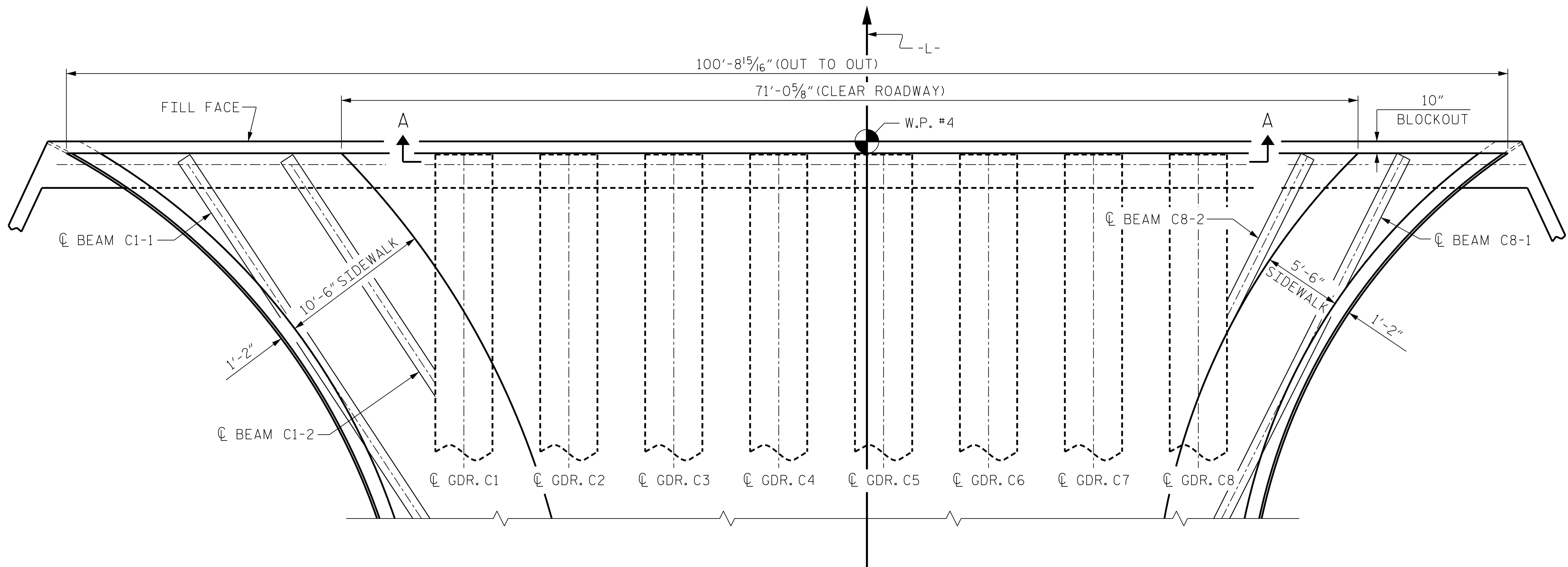


(AT BENT No. 2)

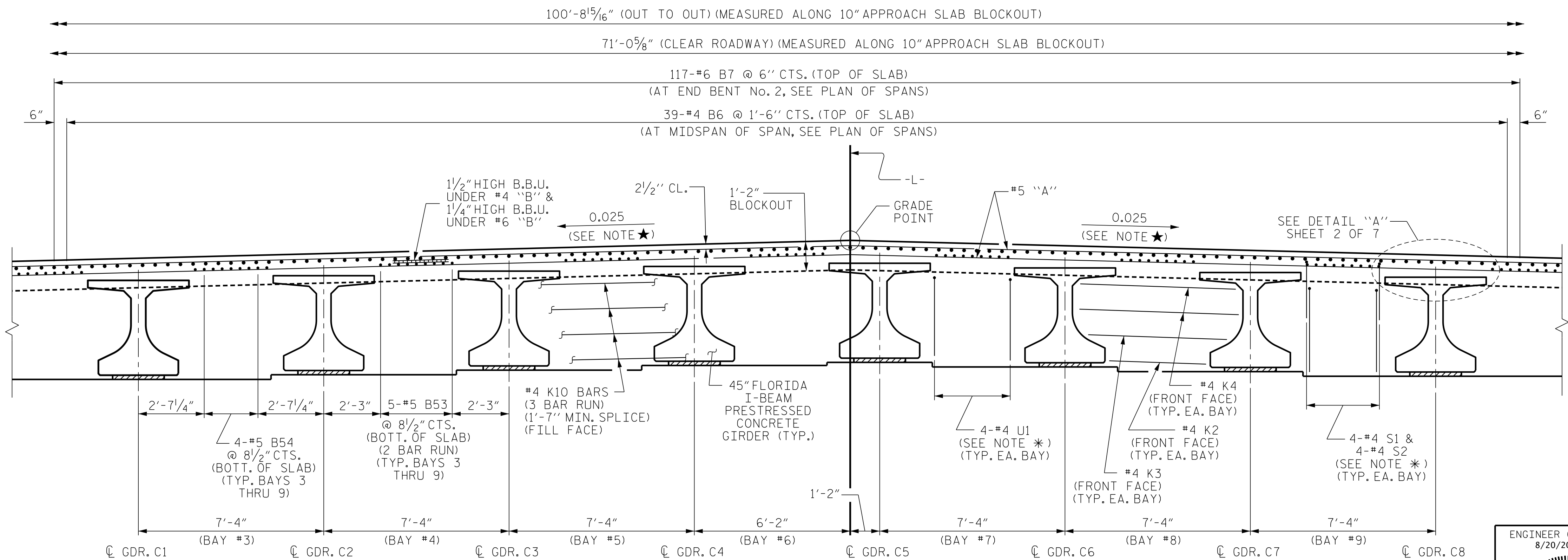


NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22



PLAN OF END BENT No. 2



SECTION A-A

(SHOWING 45" FLORIDA I-BEAM PORTION OF INTEGRAL END BENT No. 2 DIAPHRAGM)

NOTE *
THESE BARS ARE TO MATCH
#4 "V" BARS IN END BENT

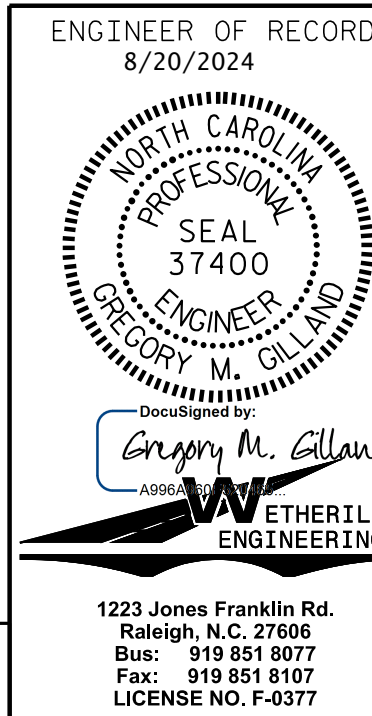
NOTE *
CROSS-SLOPE SHOWN IS TYPICAL
EXCEPT ON APPROACH SLAB AT END
BENT No. 2, WHICH VARIES. SEE
"BRIDGE APPROACH SLAB" SHEETS
FOR DETAILS.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

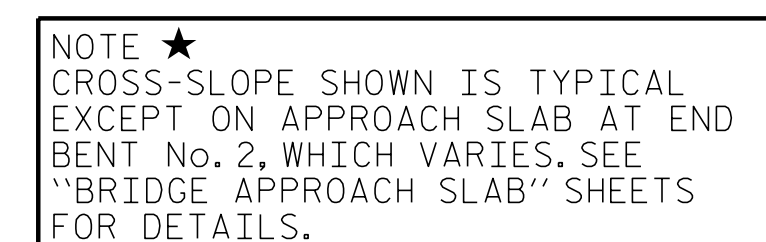
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO. S-08
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU-T.S.dgn 4/26/2024 7:43:48 AM

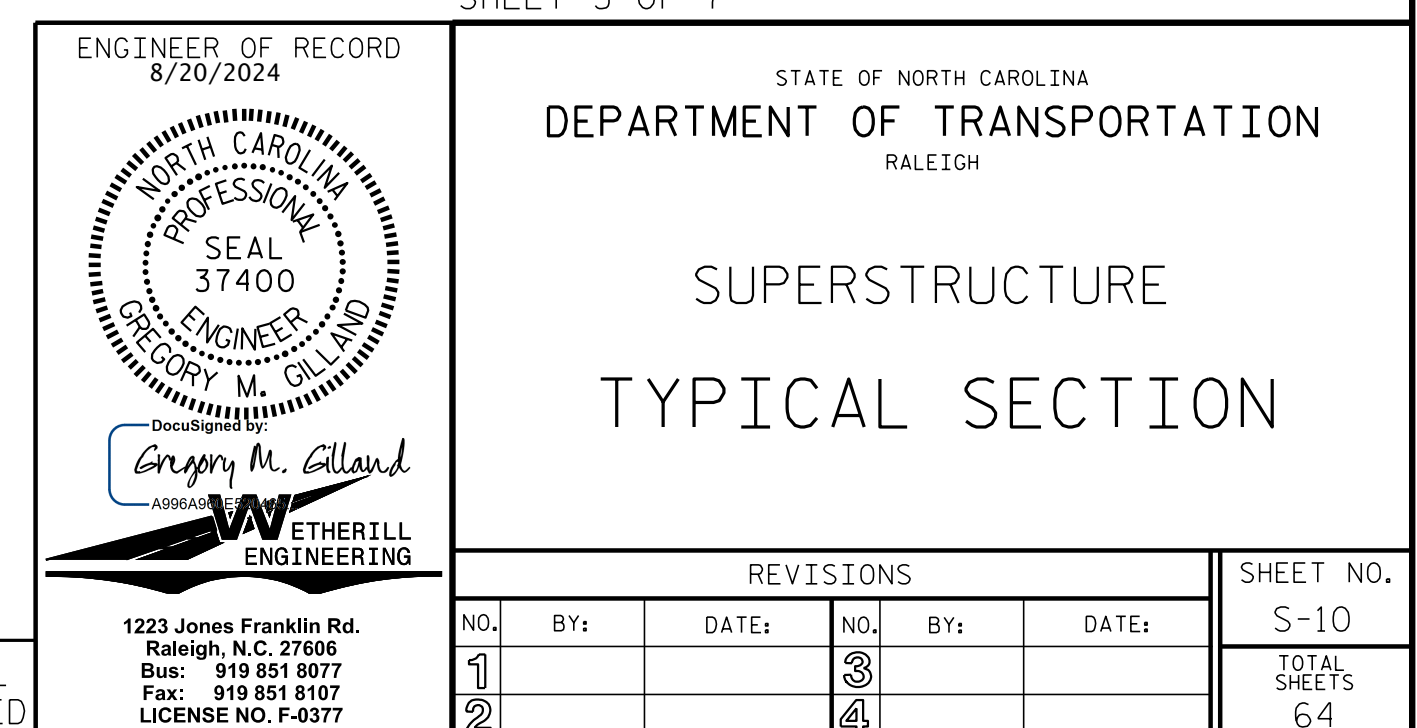


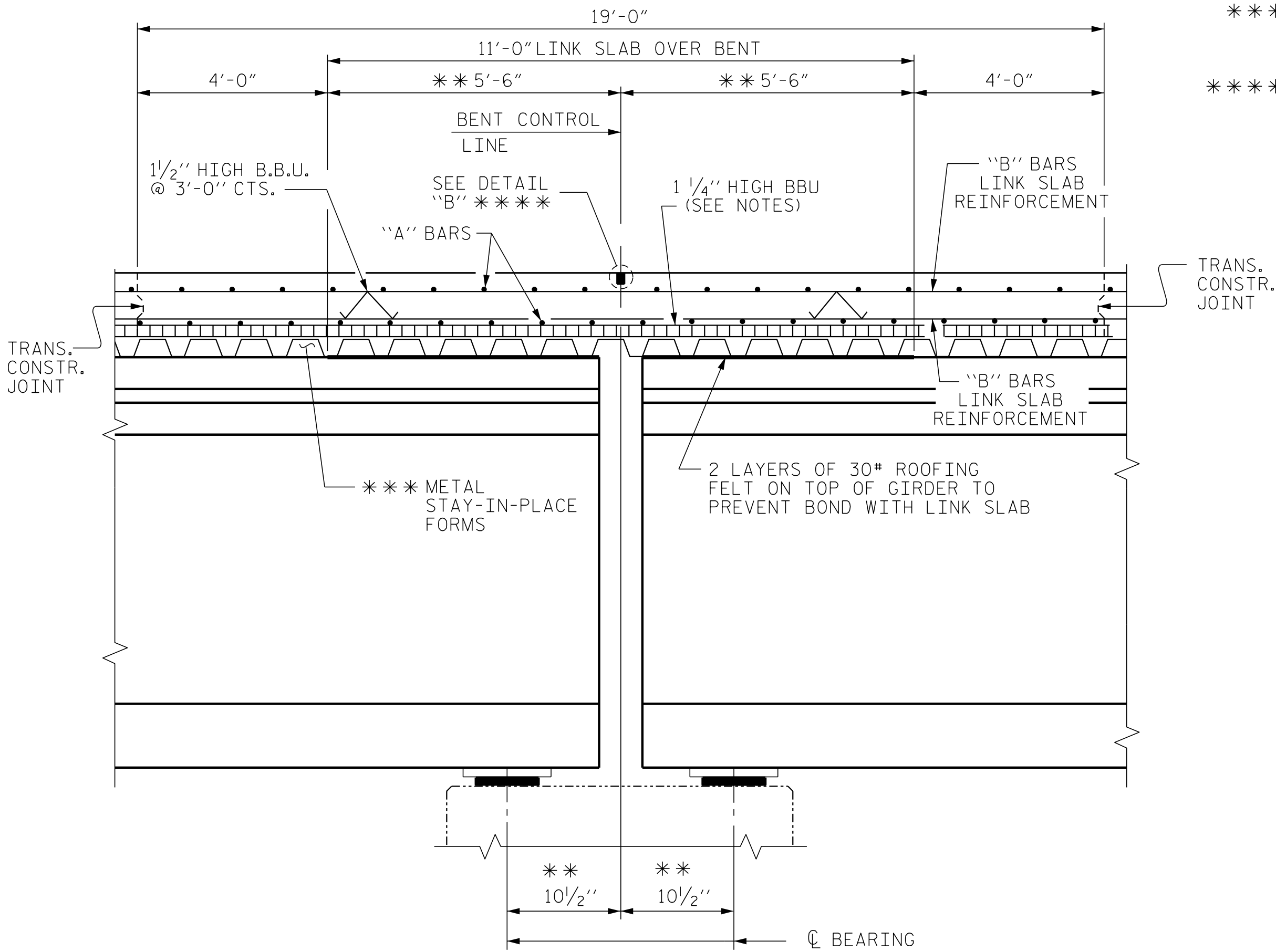
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED





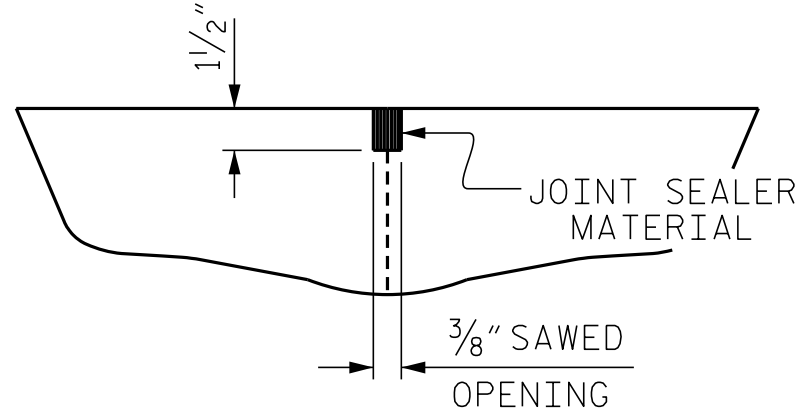
SECTION THRU LINK SLAB @ BENT No. 1

(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

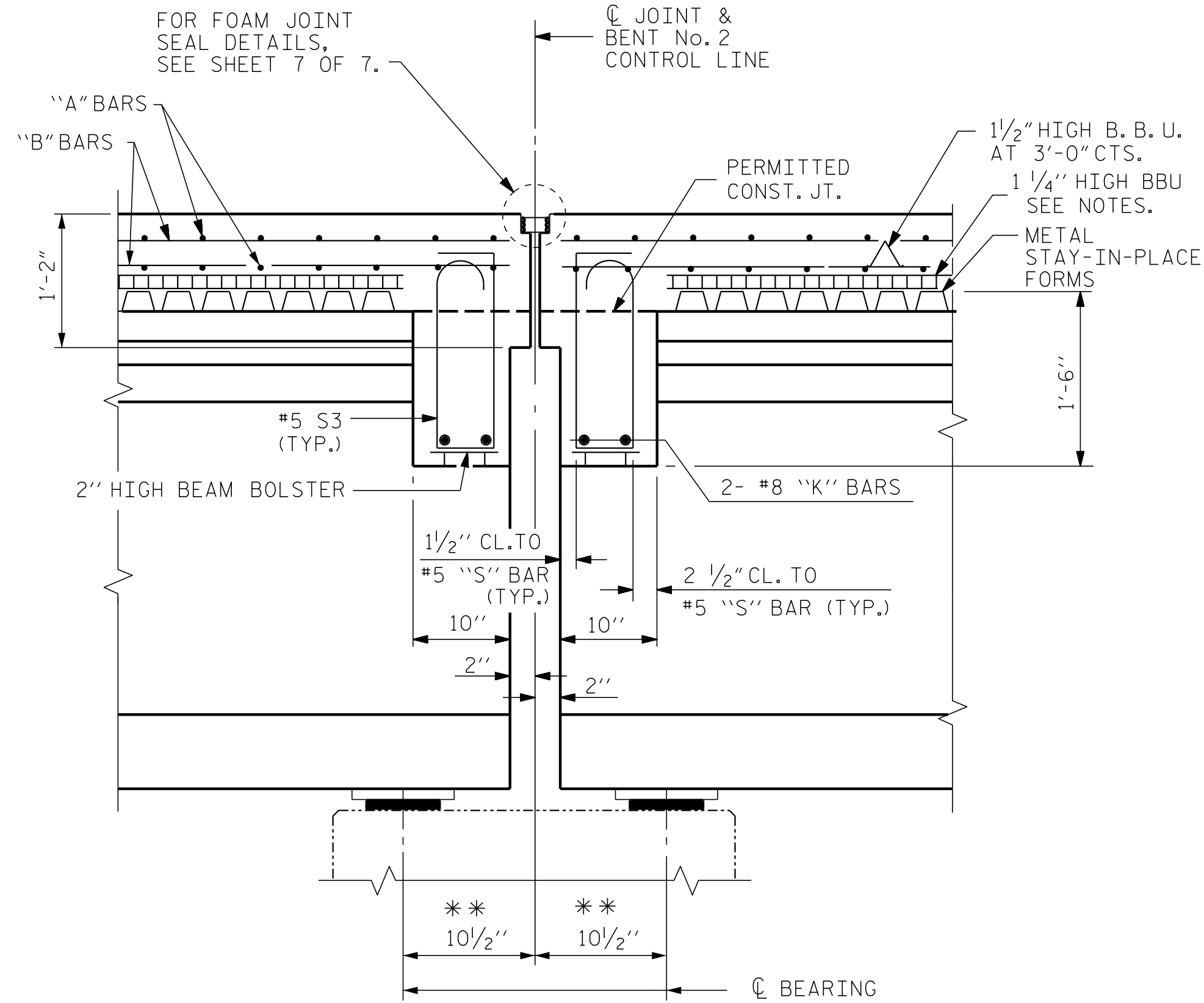
** DIMENSION IS MEASURED ALONG THE CL GIRDER

*** METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.

**** A 1 1/2" DEEP, 3/8" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATION.



DETAIL "B"



SECTION THRU BENT No. 2

(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

** DIMENSION IS MEASURED ALONG THE CL GIRDER

NOTES

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

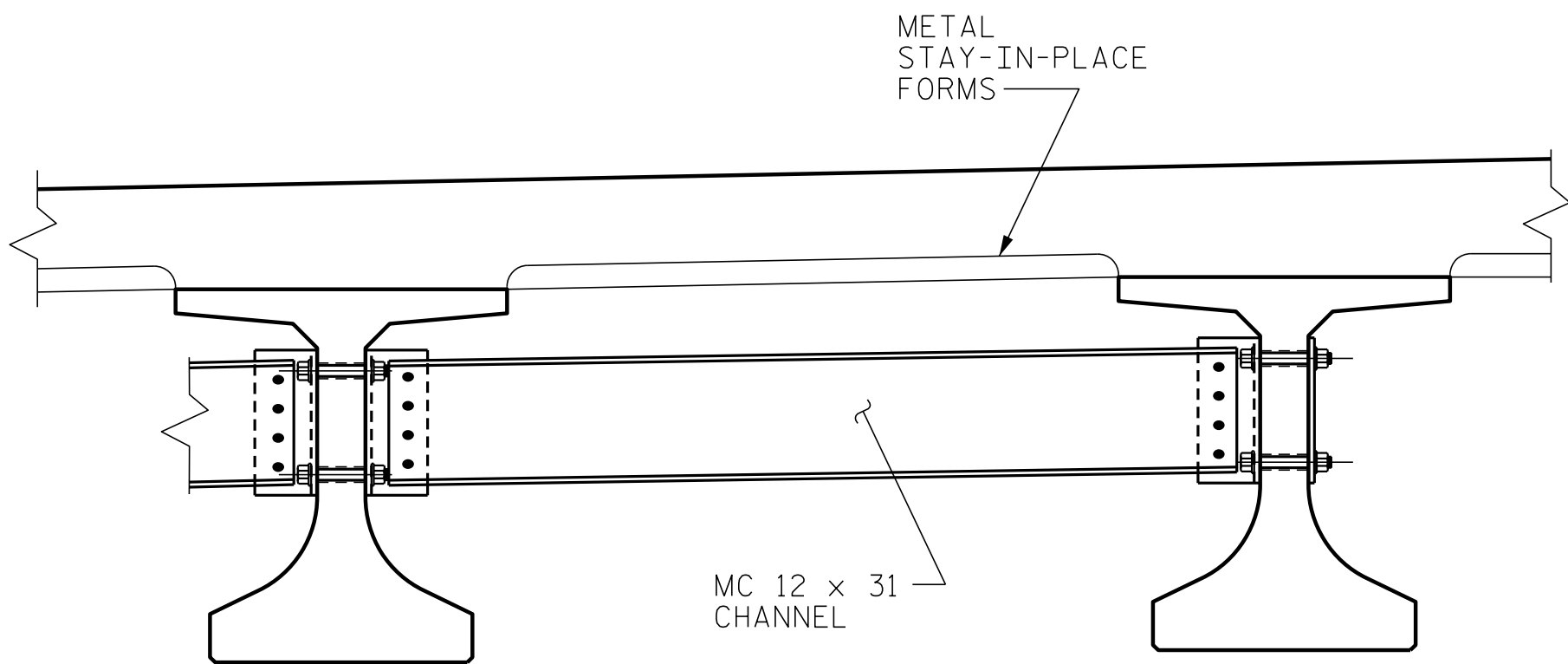
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

CLASSIC CONCRETE BRIDGE RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

DURING THE JOINT INSTALLATION PROCEDURE, THE JOINT AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 3 1/2" AT BENT No. 2.

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.



TYPICAL INTERMEDIATE DIAPHRAGM

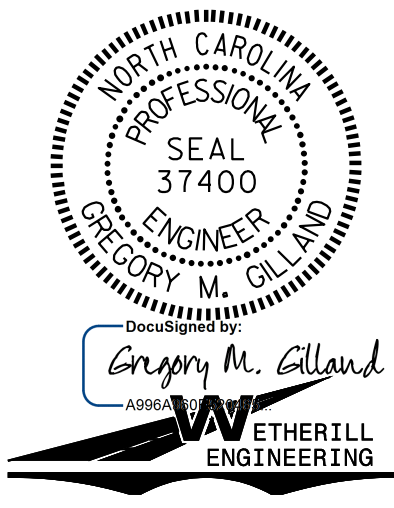
SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 45" F.I.B." SHEET FOR DETAILS

PROJECT NO. B-5985B

ROBESON COUNTY

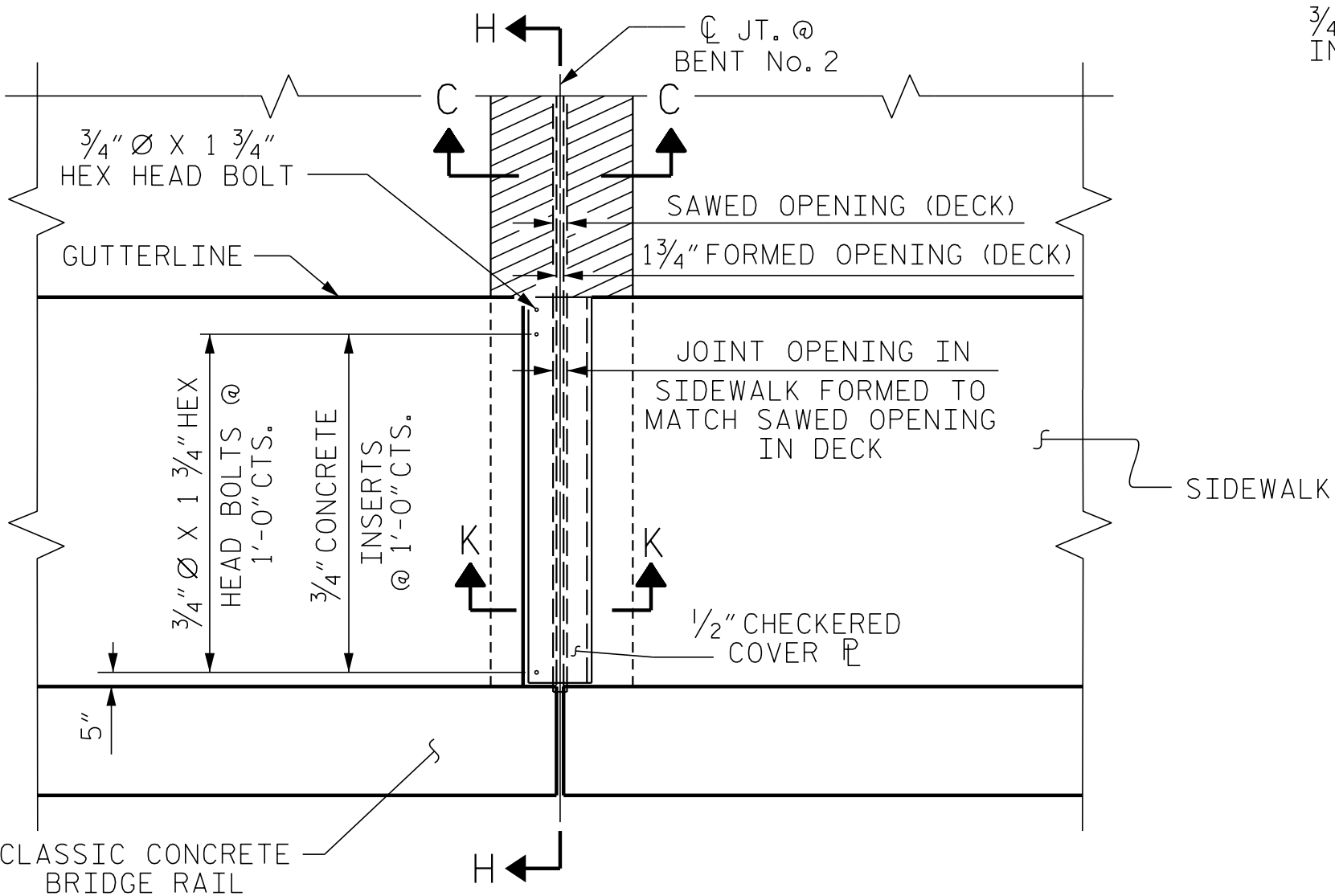
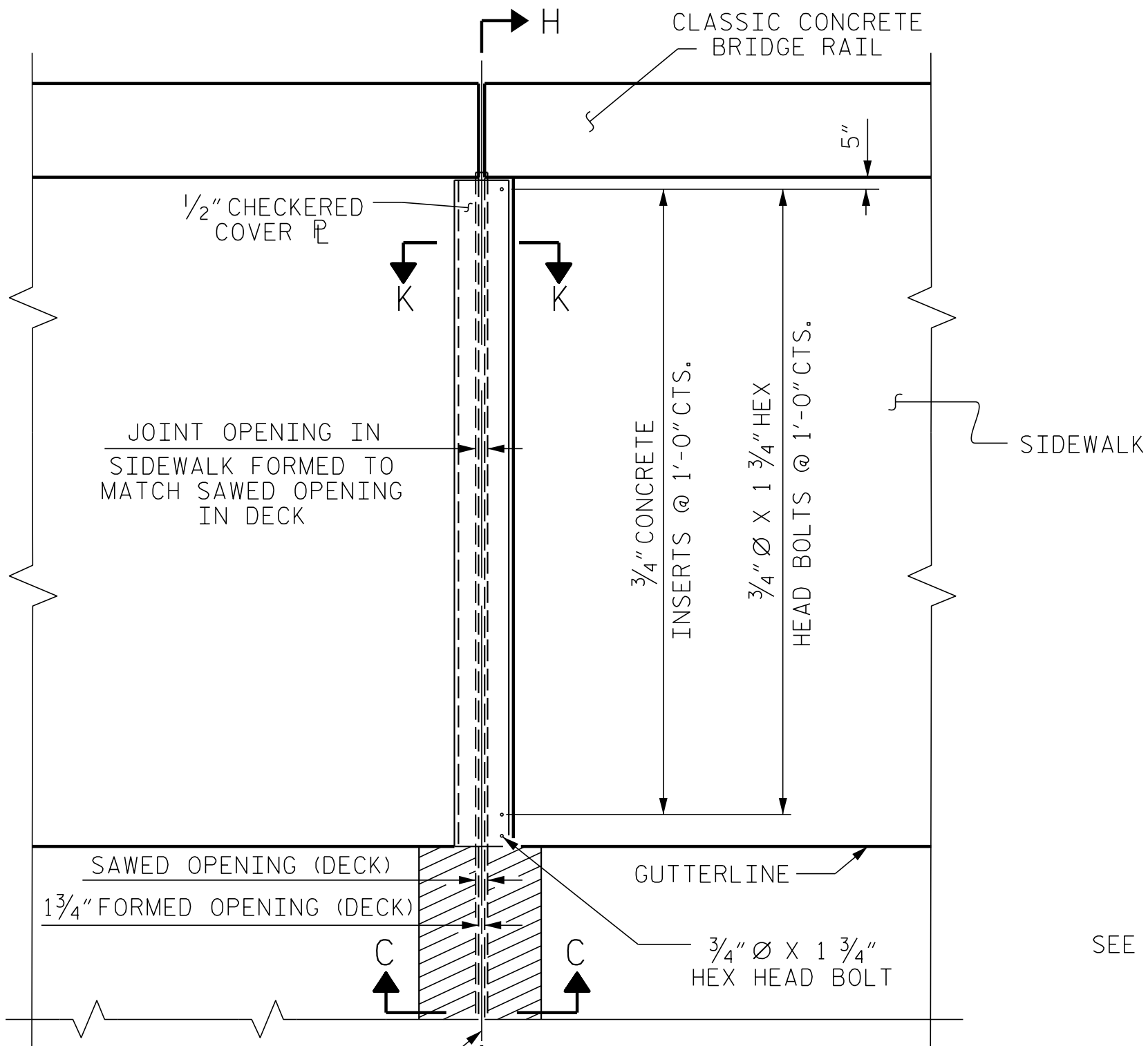
STATION: 22+08.00 -L-

SHEET 6 OF 7

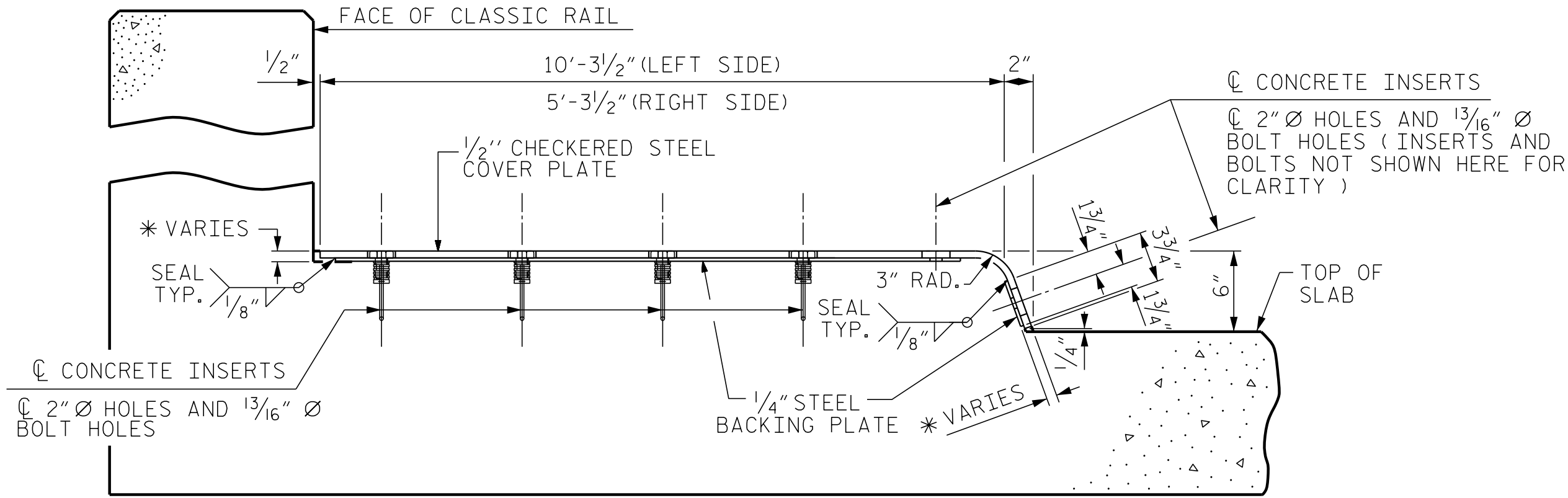
ENGINEER OF RECORD 8/20/2024		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
		SUPERSTRUCTURE TYPICAL SECTION			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DRAWN BY : D. HODGE CHECKED BY : G. GILLAND			DATE : 1/22 DATE : 7/22		
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377			SHEET NO. S-11 TOTAL SHEETS 64		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402-001 B-5985-SITE 2 770175_SKU-T Sdgn 4/26/2024 7:46:10 AM

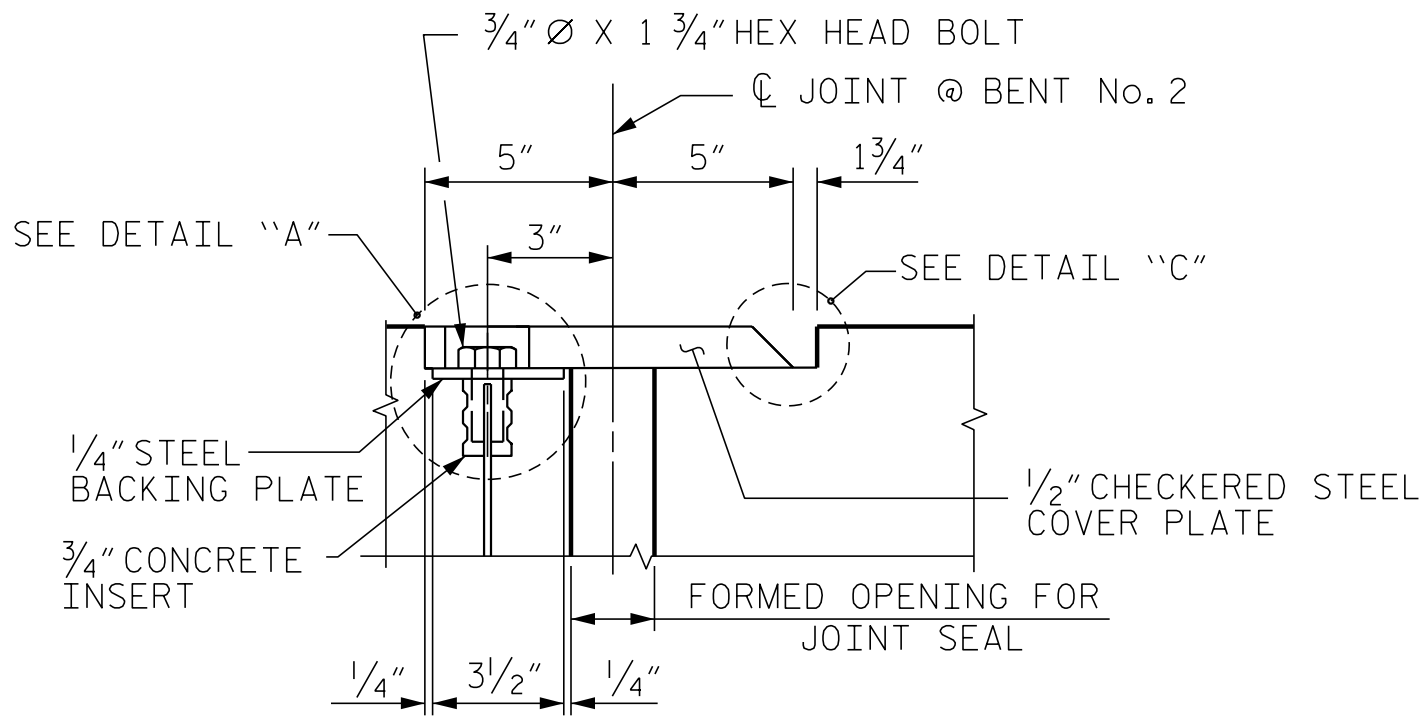


PLAN VIEW OF FOAM
JOINT SEAL @ BENT No. 2



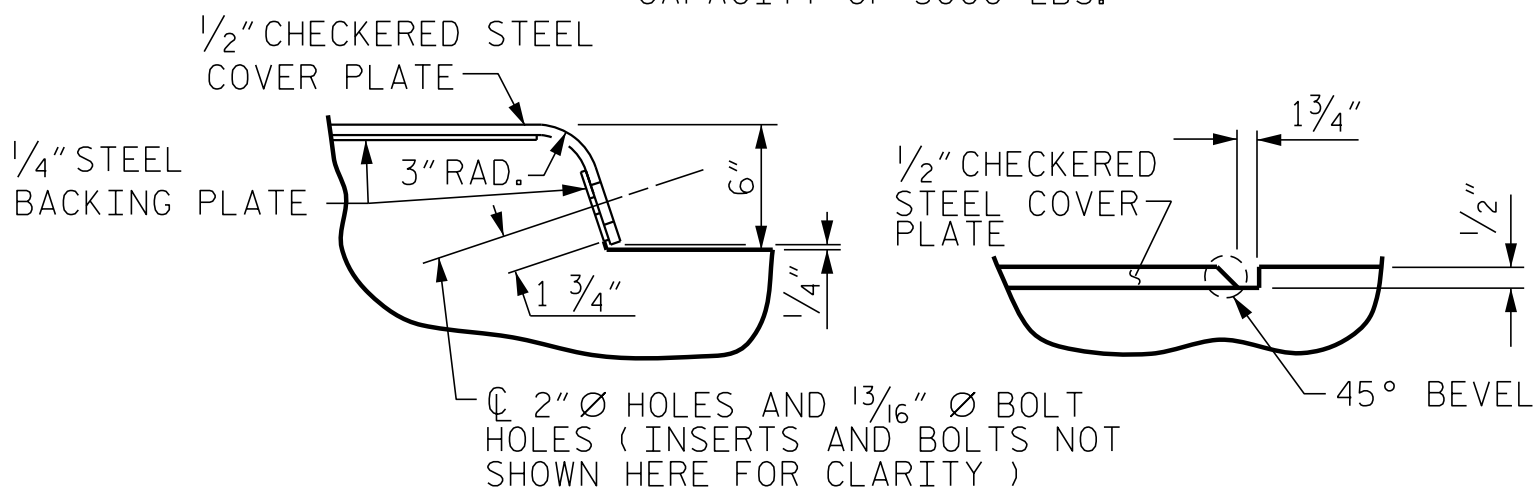
END VIEW

* CONCRETE RECESS DIMENSIONS:
1 3/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.
9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.



SECTION K-K

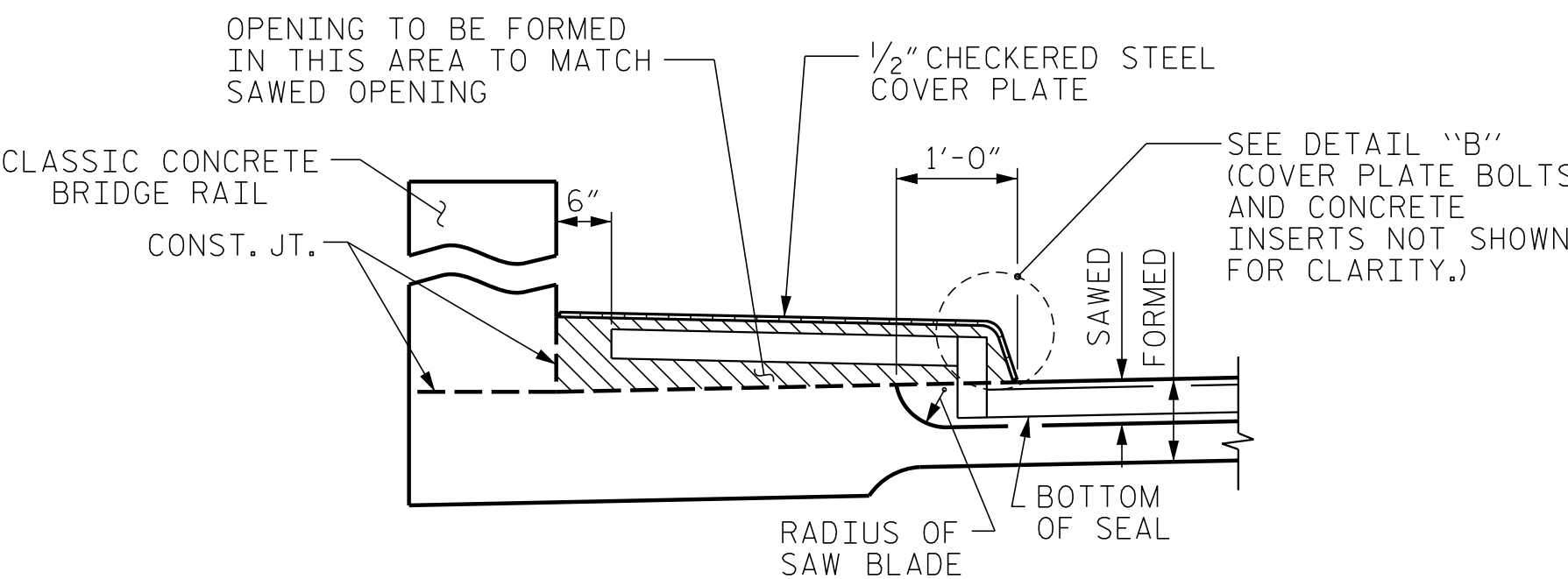
THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



DETAIL "B"

DETAIL "C"

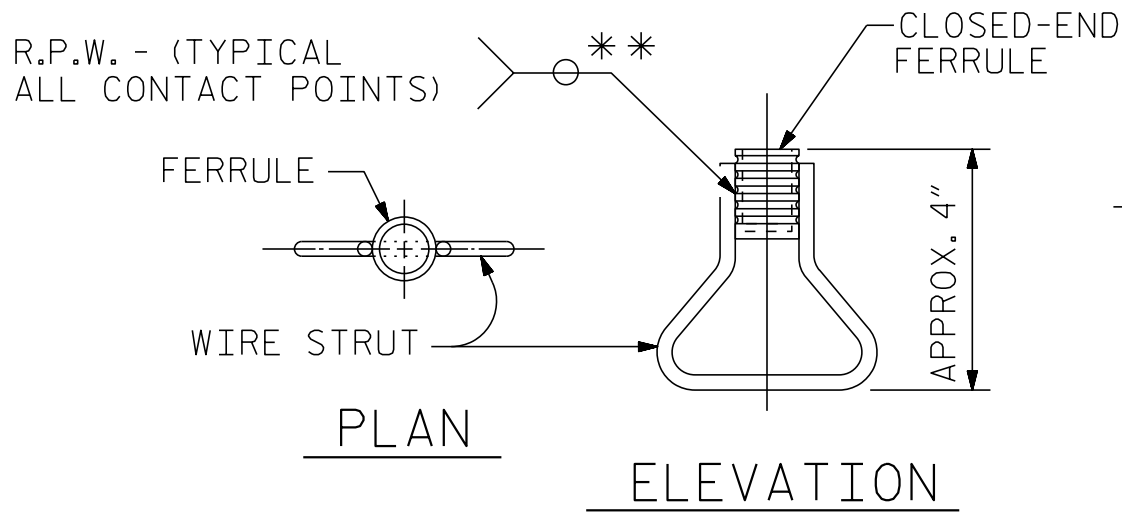
JOINT SEAL DETAILS @ BENT No. 2



SECTION H-H

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE *** (CU. FT.)
2	6.9
TOTAL	6.9

*** BASED ON THE MINIMUM BLOCKOUT SHOWN.



CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

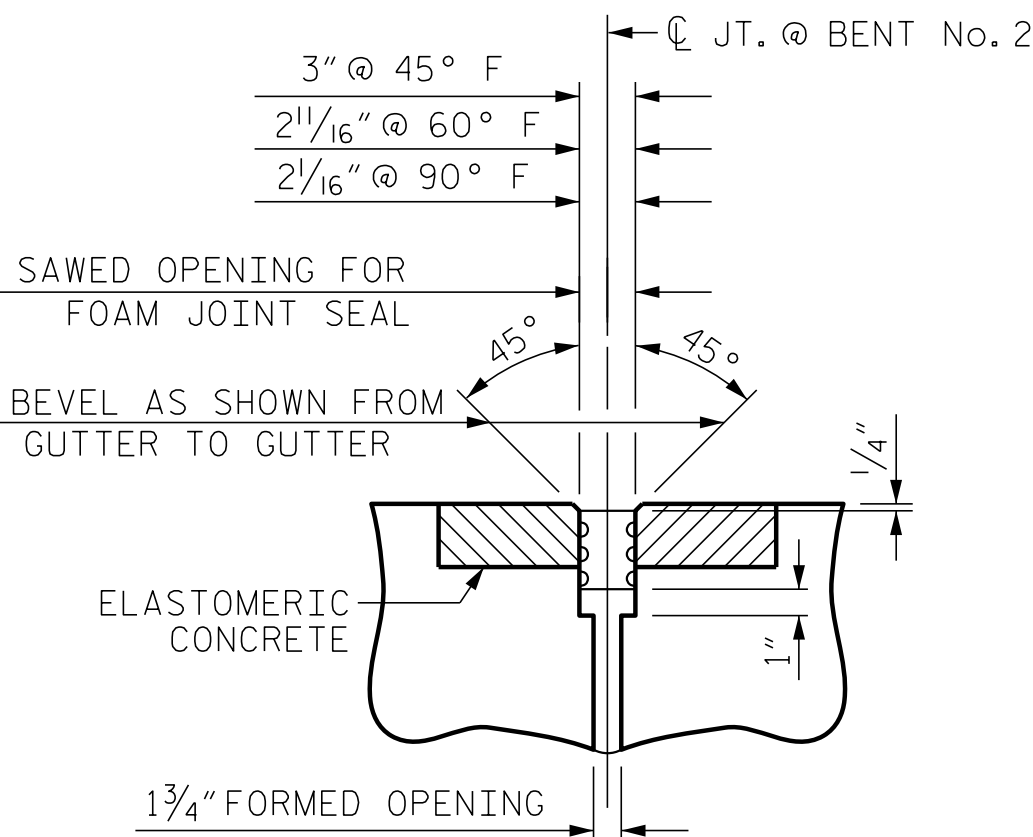
NOTES

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS. IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

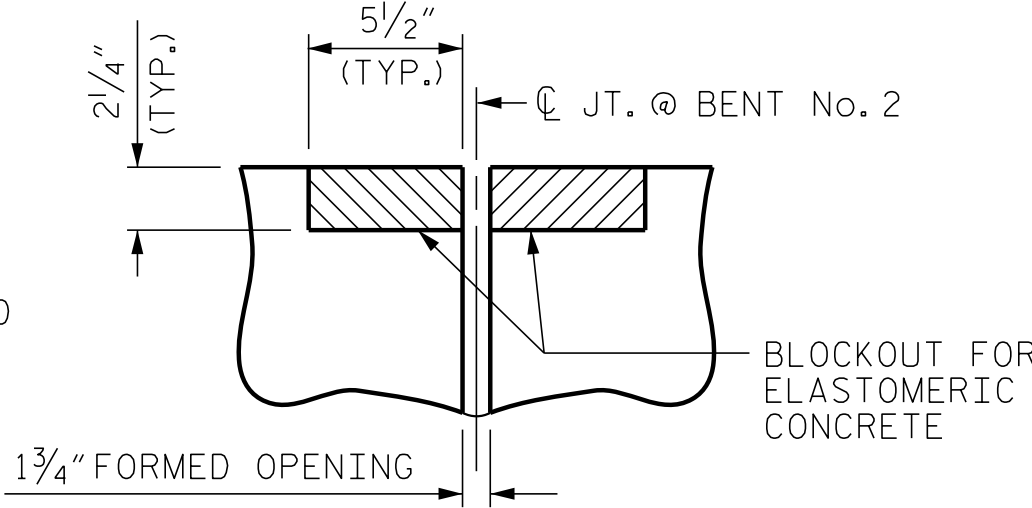
THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)



SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 7 OF 7

ENGINEER OF RECORD
8/20/2024

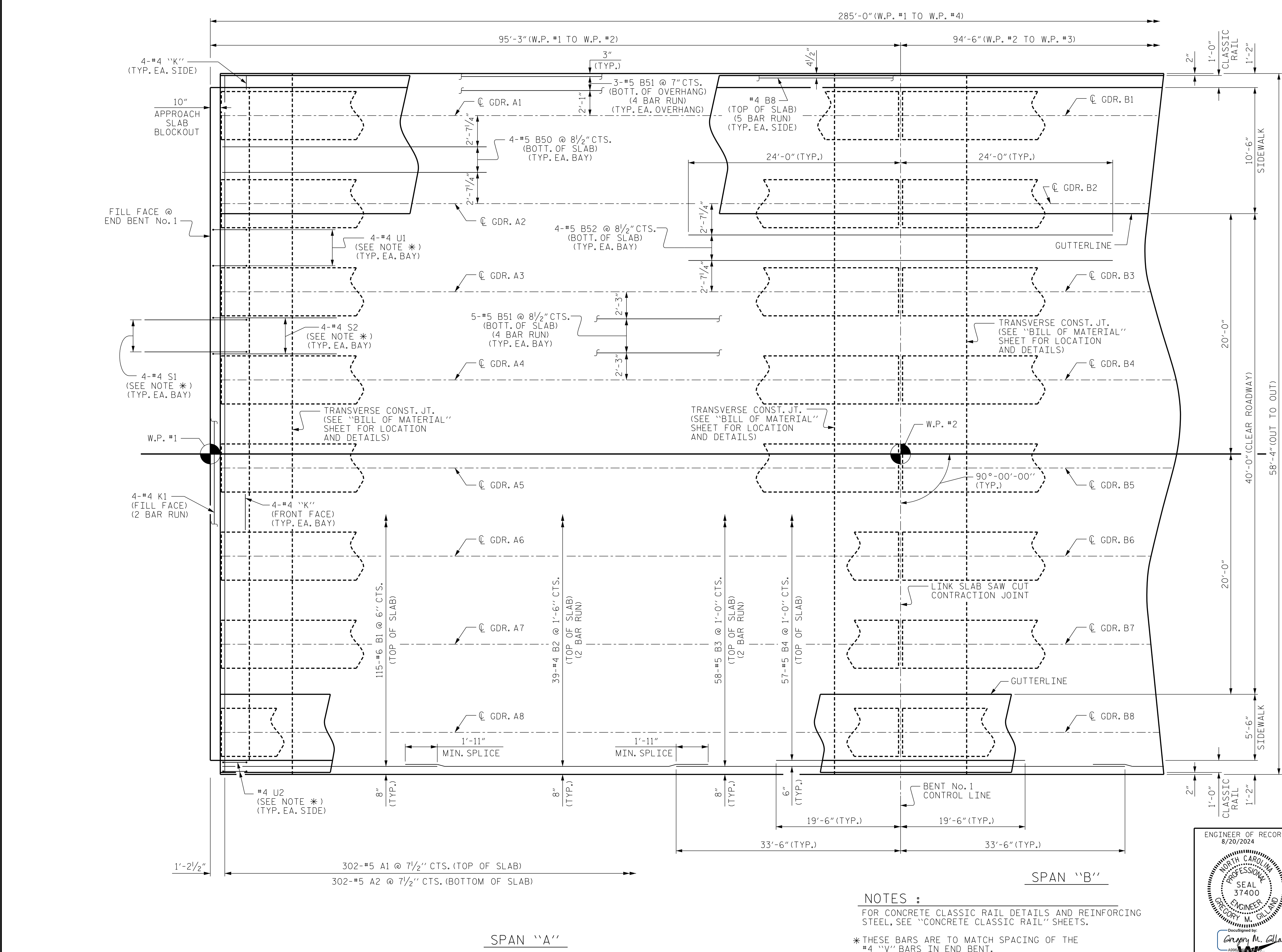
Gregory M. Gilland
ASPECT ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NODM402_001.B-5985-SITE 2 770175_SKU_PS.dgn 4/26/2024 7:47:29 AM



DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : G. GILLAND DATE : 7/22

PLAN OF SPAN "A"

NOTES :
FOR CONCRETE CLASSIC RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE CLASSIC RAIL" SHEETS.
* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.
FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 1 OF 4

ENGINEER OF RECORD
8/20/2024



Gregory M. Gilland
ABE
ETHERILL
ENGINEERING

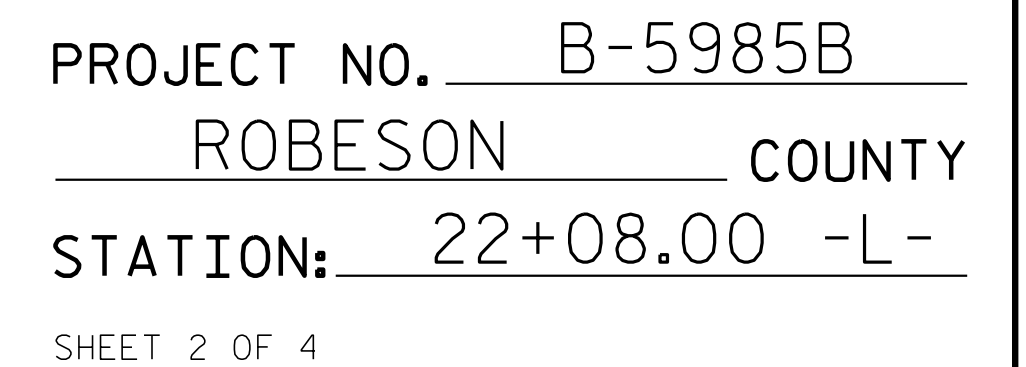
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-13
TOTAL SHEETS
64



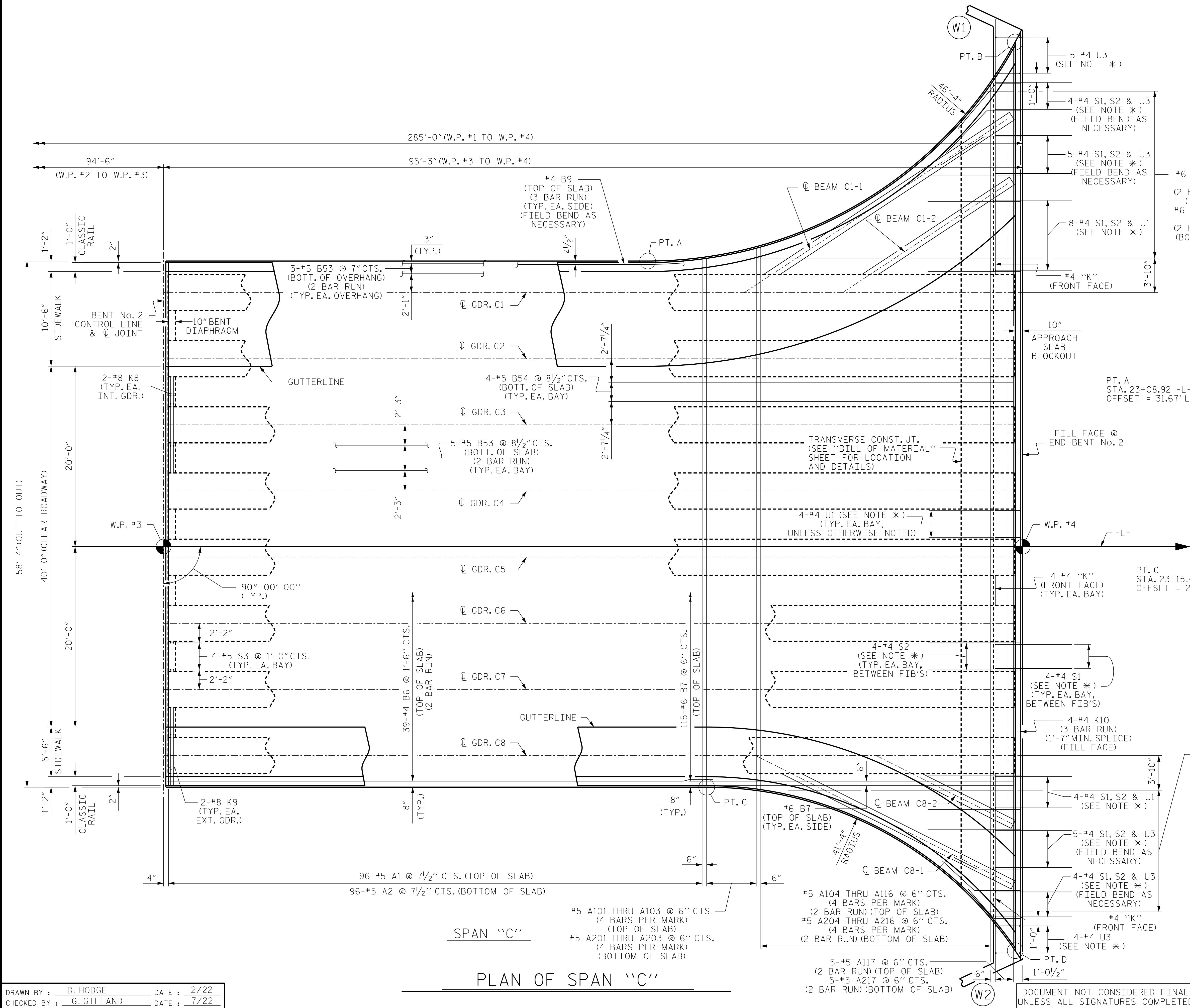
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14 TOTAL SHEETS 64
1			3			
2			4			

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402-001 B-5985-SITE 2 770175_SKU_PS.dgn 4/26/2024 4:48:27 AM



NOTES :

FOR CLASSIC CONCRETE BRIDGE RAIL DETAILS AND REINFORCING STEEL, SEE "CLASSIC CONCRETE BRIDGE RAIL" SHEETS.

*THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.

FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

#6 B101 THRU B119 @ 6" CTS. (2 BARS PER MARK) (TOP OF SLAB)
#6 B201 THRU B219 @ 6" CTS. (2 BARS PER MARK) (BOTTOM OF SLAB)

PT. A STA. 23+08.92 -L- OFFSET = 31.67' LT.

PT. C STA. 23+15.46 -L- OFFSET = 26.67' RT.

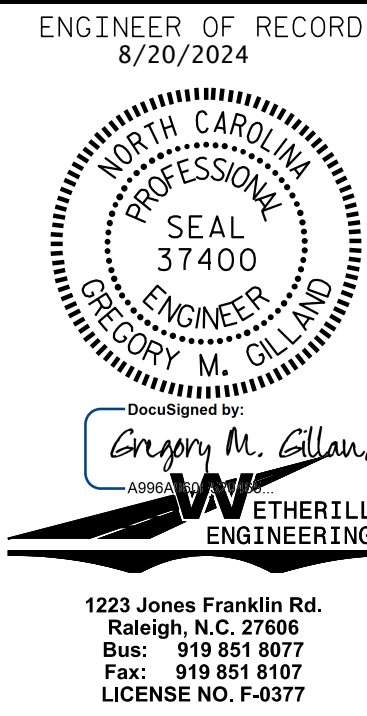
#6 B151 THRU B164 @ 6" CTS. (2 BARS PER MARK) (TOP OF SLAB)
#6 B251 THRU B264 @ 6" CTS. (2 BARS PER MARK) (BOTT. OF SLAB)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 4

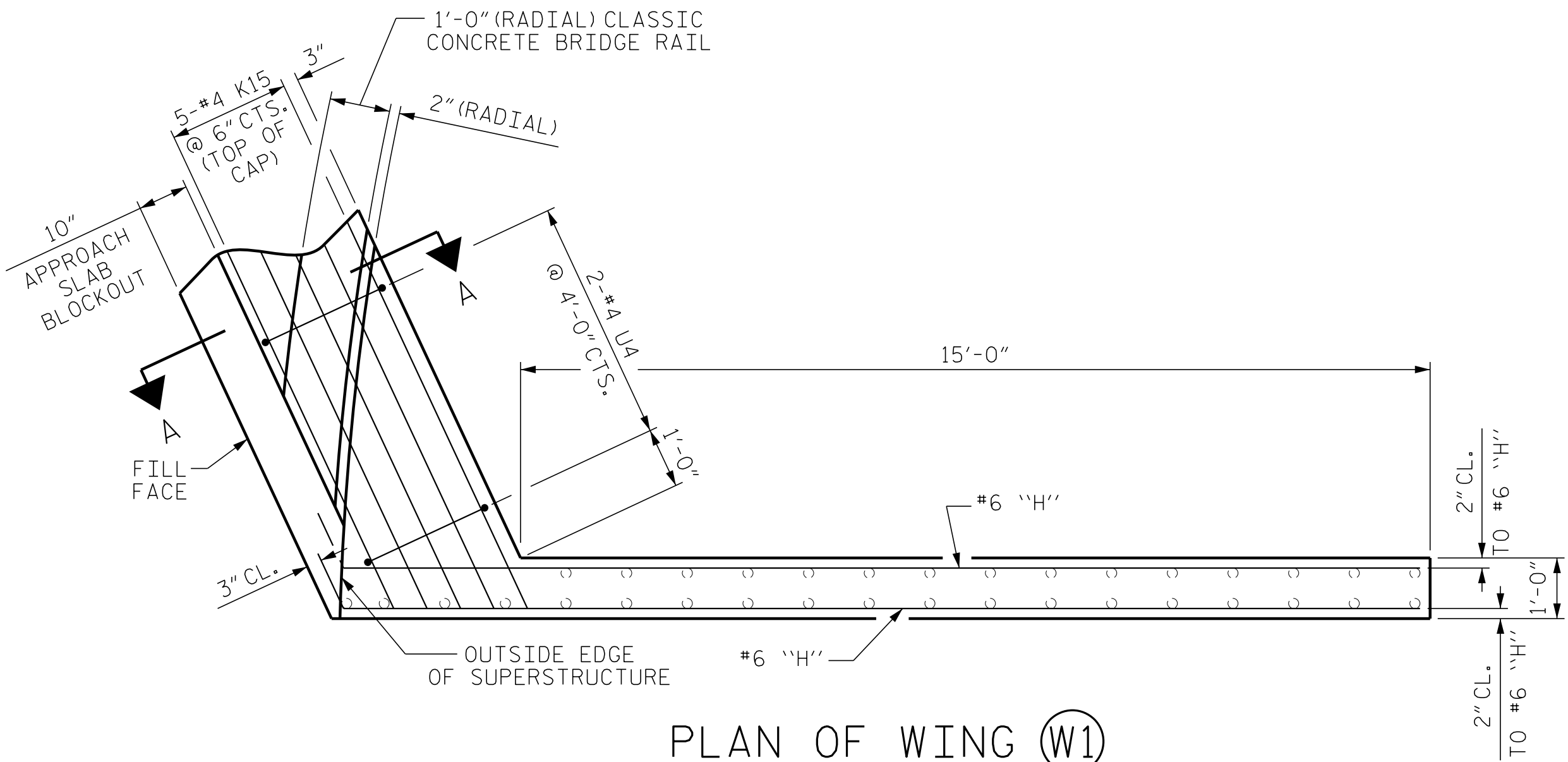


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

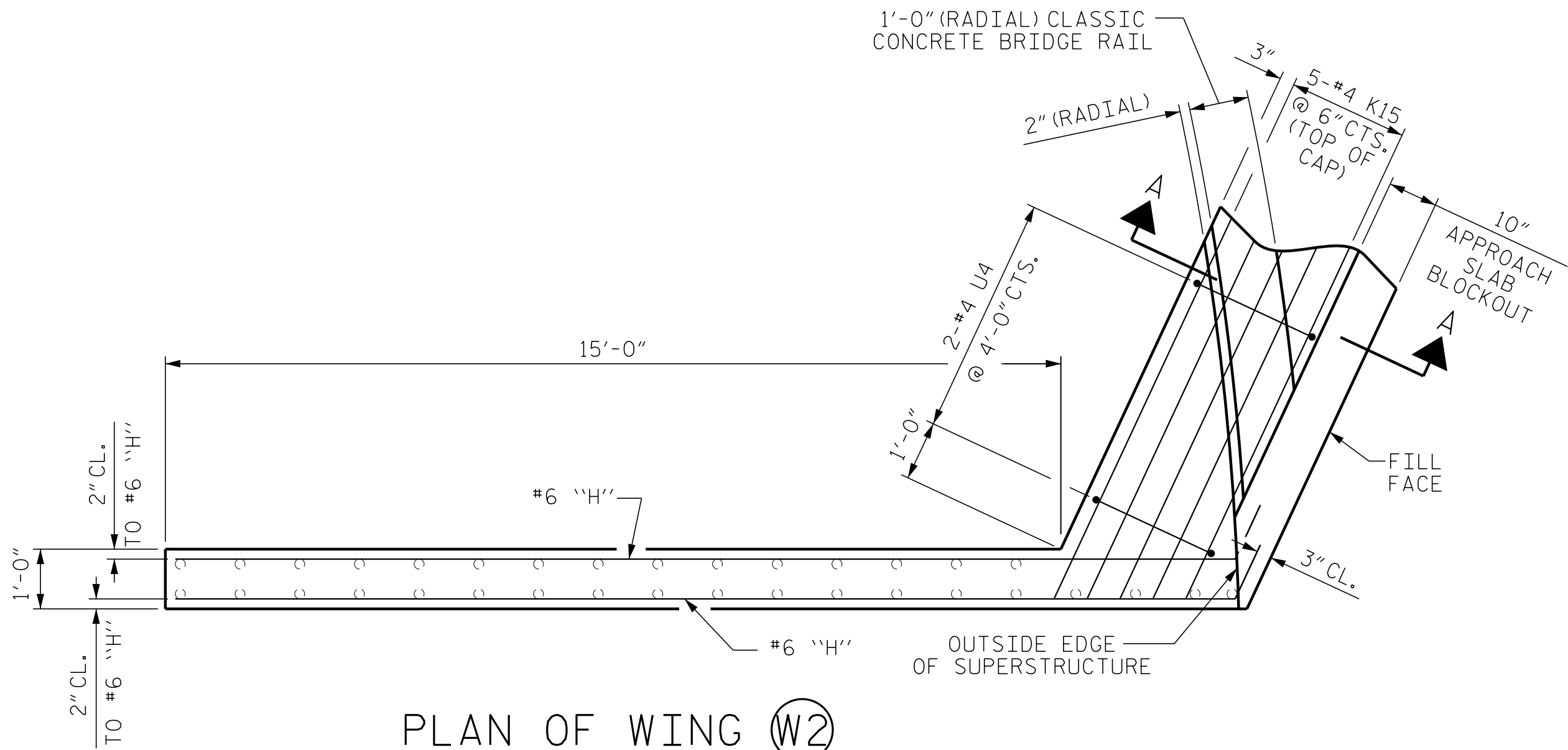
SUPERSTRUCTURE
PLAN OF SPANS

DRAWN BY: D. HODGE DATE: 2/22
CHECKED BY: G. GILLAND DATE: 7/22

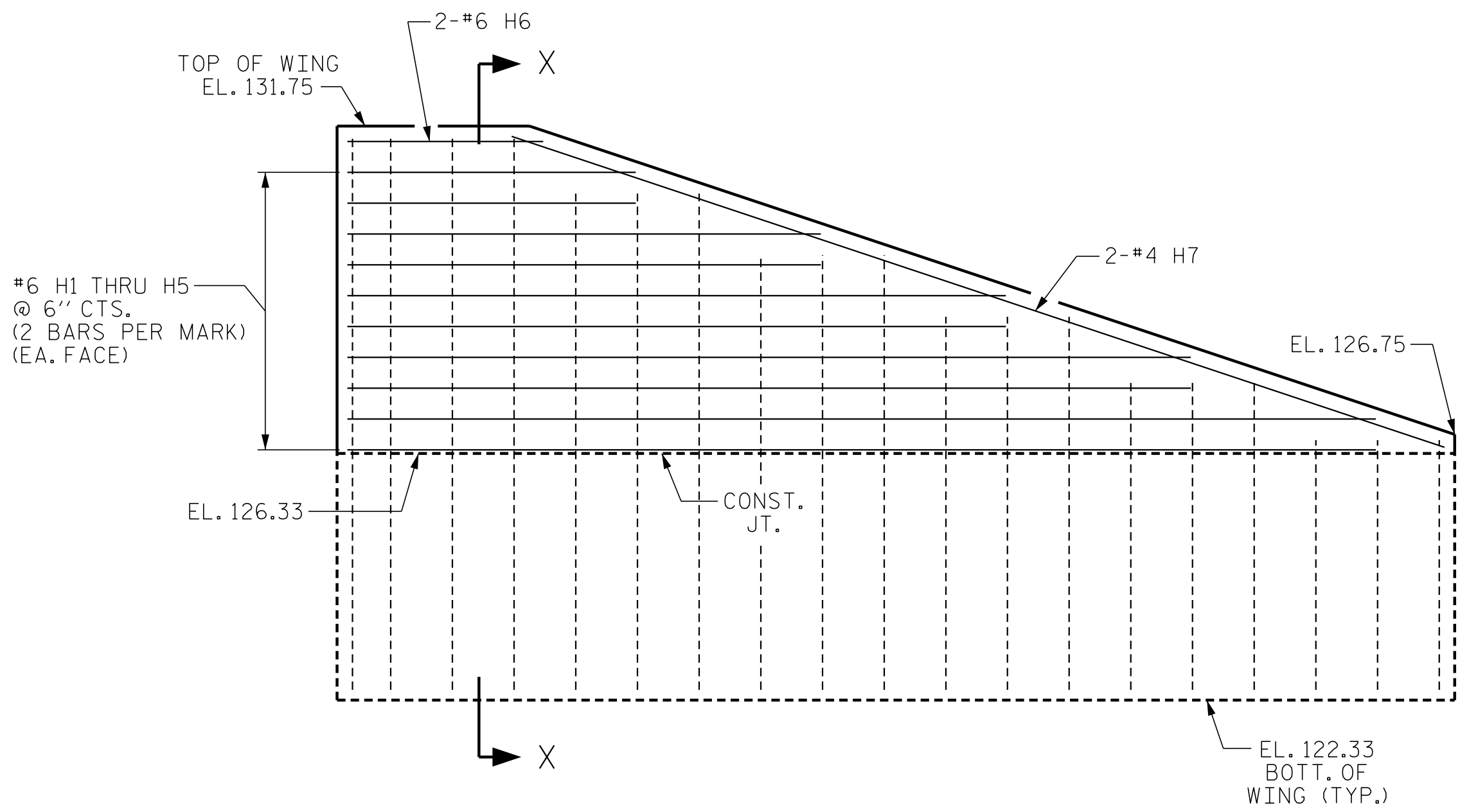
PLAN OF SPAN "C"



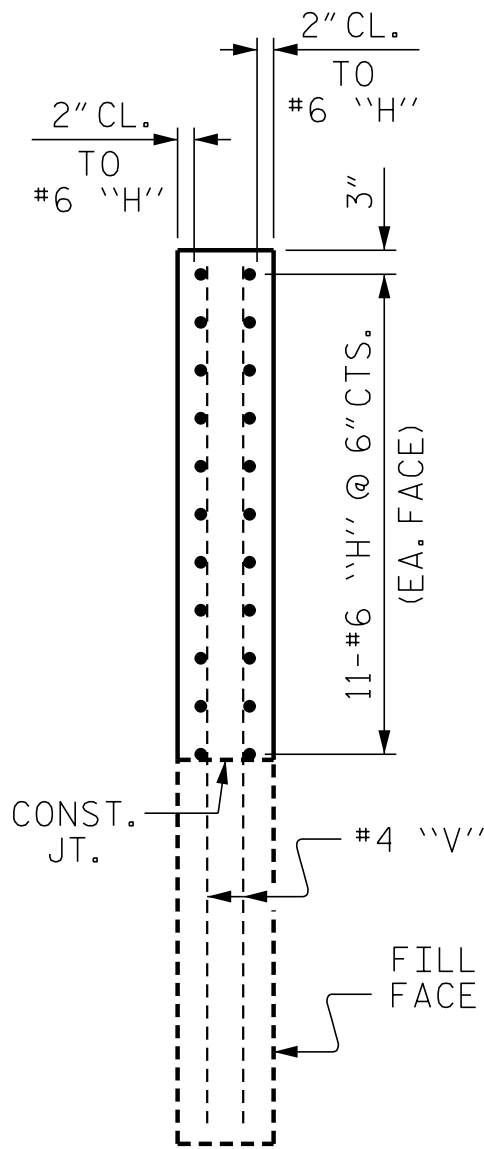
PLAN OF WING (W1)



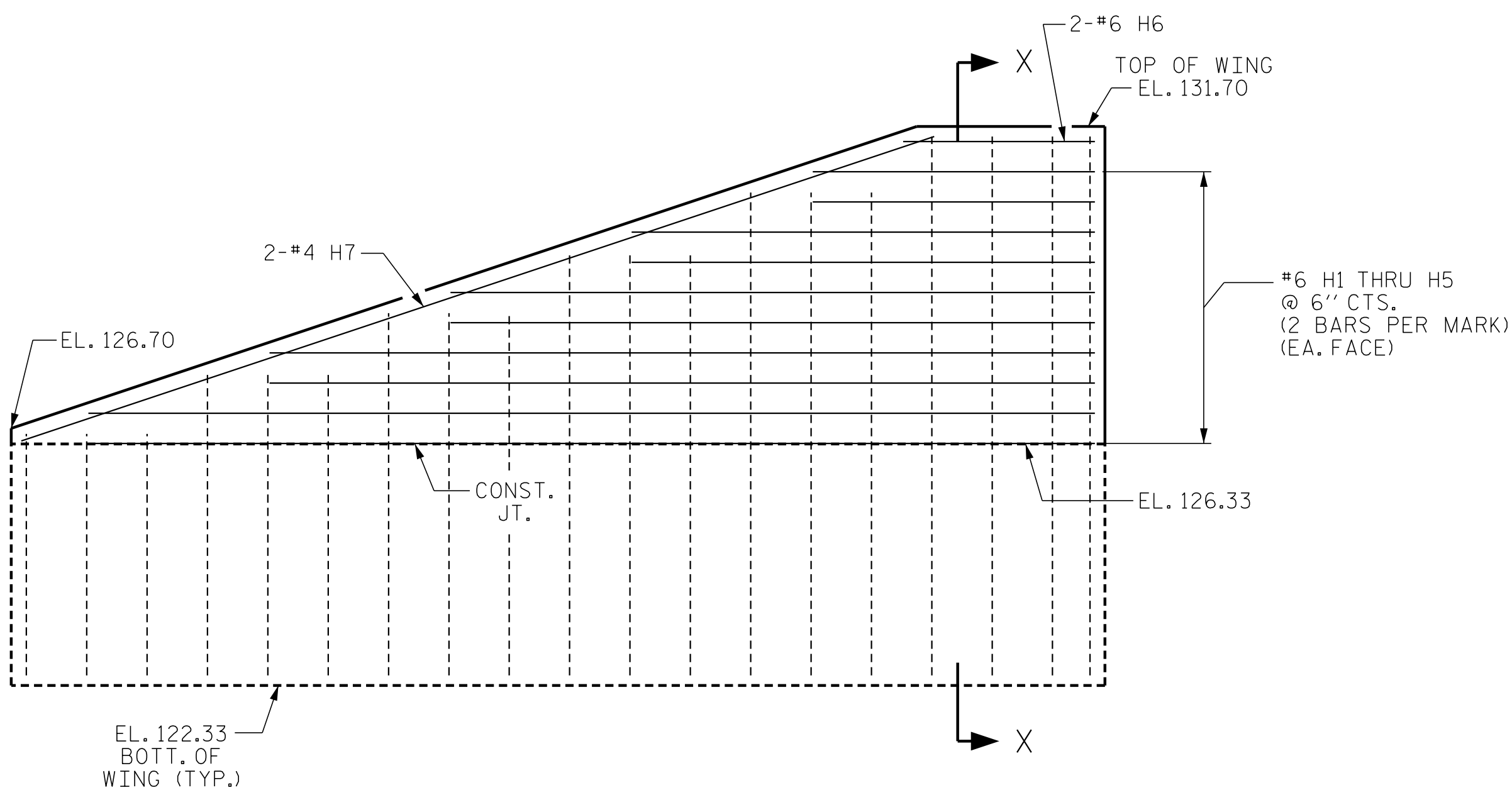
PLAN OF WING (W2)



ELEVATION OF WING (W1)

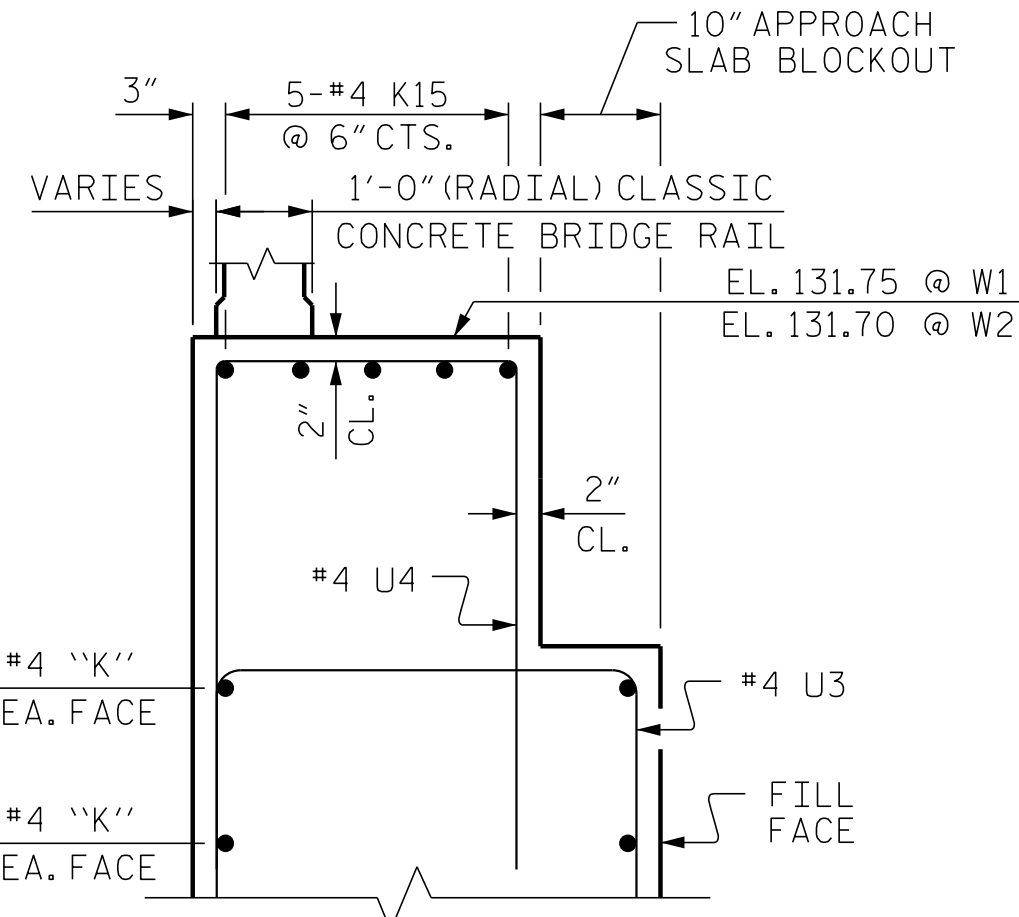


SECTION X-X



ELEVATION OF WING (W2)

UPPER WINGS AT INTEGRAL END BENT No. 2

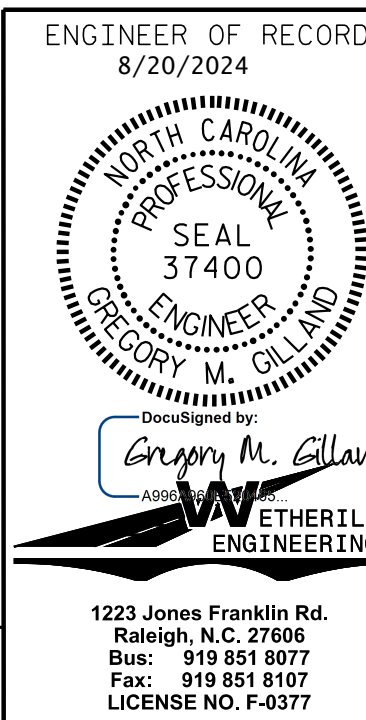


SECTION A-A

NOTE: THE LOWER PORTION OF THE WINGS SHALL BE POURED WITH END BENT No. 2 SUBSTRUCTURE. FOR DETAILS AND REINFORCING STEEL, SEE END BENT No. 2 DETAILS.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
END BENT No. 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-16
2			4			
TOTAL SHEETS						64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : G. GILLAND DATE : 8/22

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001.B-5985-STE 2 770175_SKU_FP.dgn
4/26/2024 7:49:46 AM

DRAWN BY : D. HODGE DATE : 2/22
CHECKED BY : T. DIFFEE DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400
CIVIL ENGINEER
GREGORY M. GILLAND

DocuSigned by
Gregory M. Gilland
ETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
GIRDER LAYOUT

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-17
TOTAL
SHEETS
64

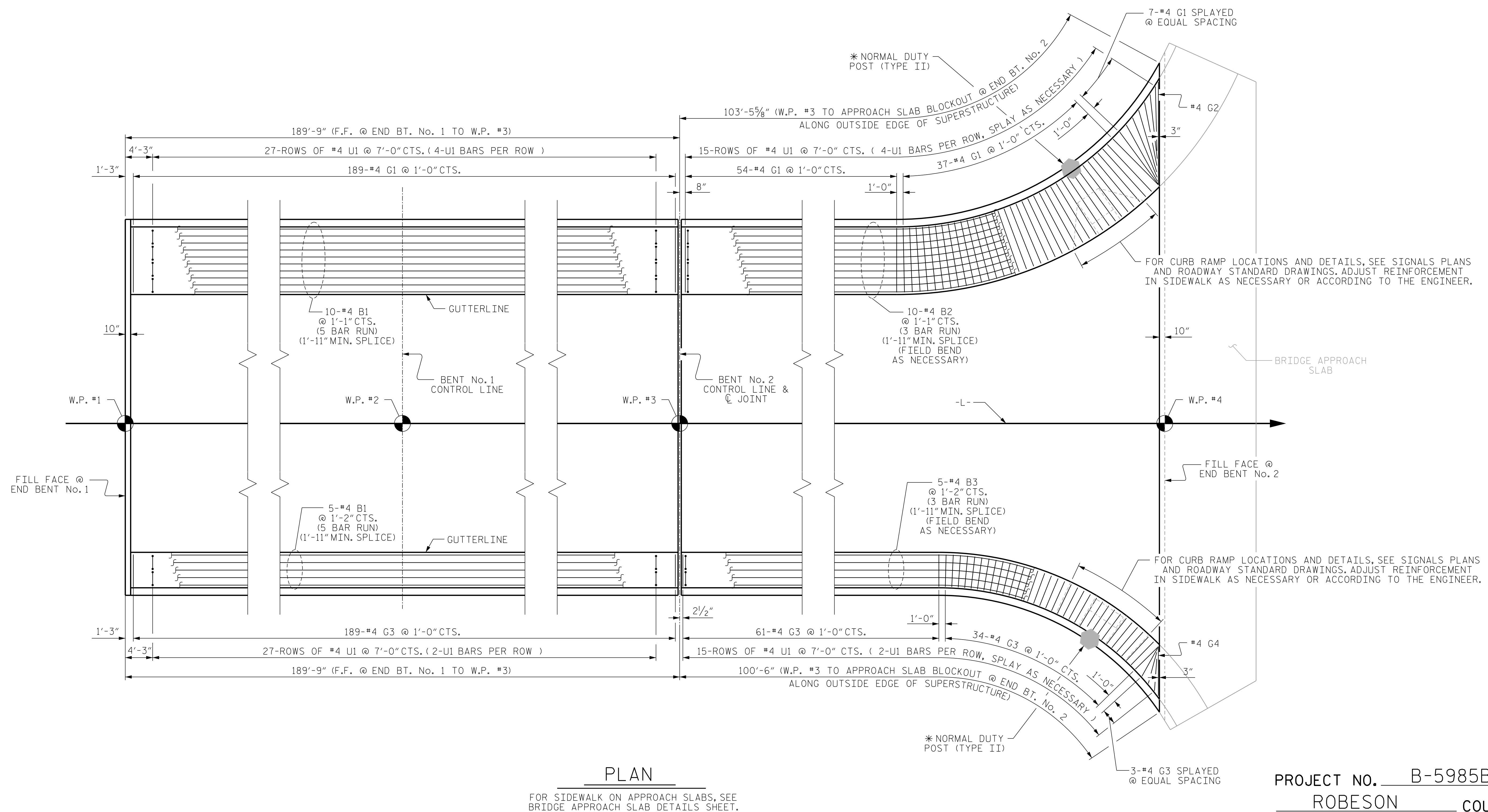
The diagram illustrates the girder layout for a bridge structure, divided into three spans: SPAN A, SPAN B, and SPAN C. The layout includes various girders (A1-A8, B1-B8, C1-C8), steel diaphragms, and bents (W.P. #1, #2, #3, #4). Dimensions are provided for span lengths, girder spacings, and specific structural details. Key features include:

- SPAN A:** 95'-3" long, between W.P. #1 and W.P. #2. Girders A1-A8 are spaced 7'-4" apart. Intermediate steel diaphragms are shown between girders.
- SPAN B:** 94'-6" long, between W.P. #2 and W.P. #3. Girders B1-B8 are spaced 7'-4" apart. A 90°-00'-00" (TYP.) angle is indicated between girders B5 and B6.
- SPAN C:** 95'-3" long, between W.P. #3 and W.P. #4. Girders C1-C8 are spaced 7'-4" apart. Steel diaphragms and beams (C1-1, C1-2, C8-1, C8-2) are detailed with specific dimensions and angles.

Other details include "FILL FACE @ END BENT No. 1" and "FILL FACE @ END BENT No. 2", and "BENT No. 1 CONTROL LINE" and "BENT No. 2 CONTROL LINE".

GIRDER LAYOUT

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

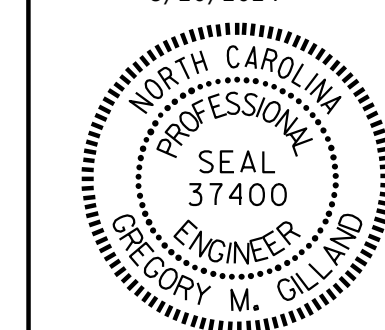


* SEE "CLASSIC CONCRETE BRIDGE RAIL" SHEETS FOR
NORMAL DUTY POST (TYPE II) LOCATION. FOR INSTALLATION
REQUIREMENTS, SEE SIGNALS PLANS AND ROADWAY STANDARD DRAWINGS.

PROJECT NO. B-5985B
ROBESON COUNTY
 STATION: 22+08.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
8/20/2024



DocuSigned by:
Gregory M. Gillan
A9901961827000...

WETHERIL
ENGINEERING

1223 Jones Franklin Rd
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAIL

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : G. GILLAND DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NOTES:

FOR CLASSIC CONCRETE BRIDGE RAIL REINFORCING STEEL AND DETAILS, SEE "CLASSIC CONCRETE BRIDGE RAIL" SHEETS.

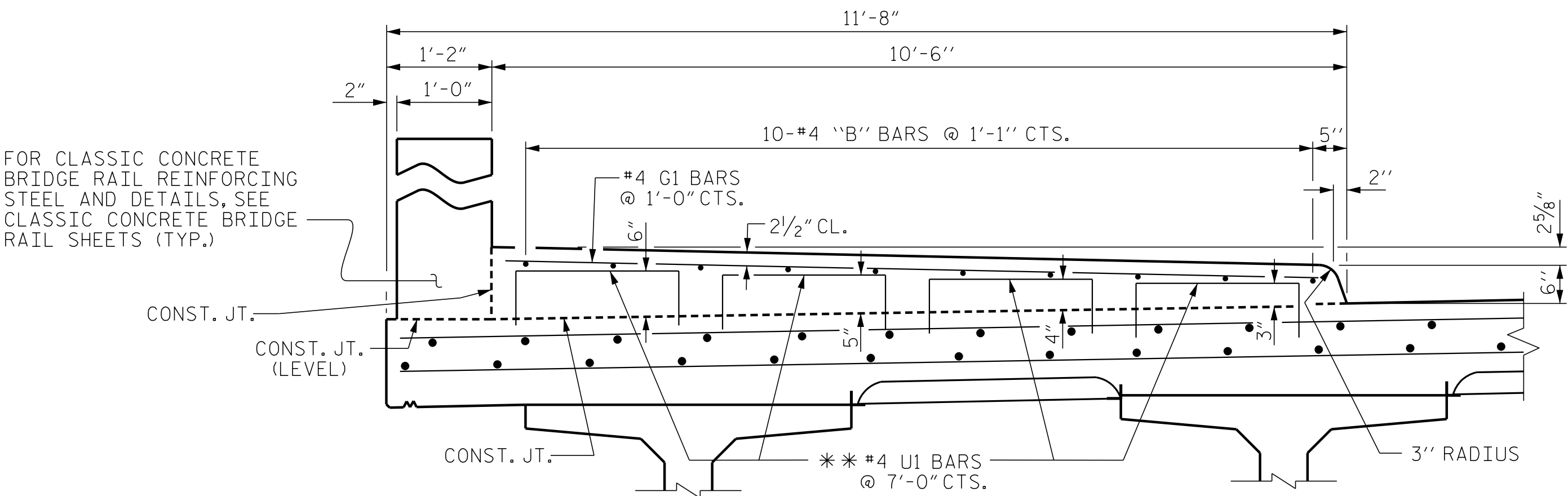
GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED ABOVE BENT No. 1 CONTROL LINE AND AT A SPACING OF 8 FEET TO 10 FEET.

THE SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

SIDEWALK ON THE BRIDGE IS PAID FOR AS PART OF THE "REINFORCED CONCRETE DECK SLAB" PAY ITEM.

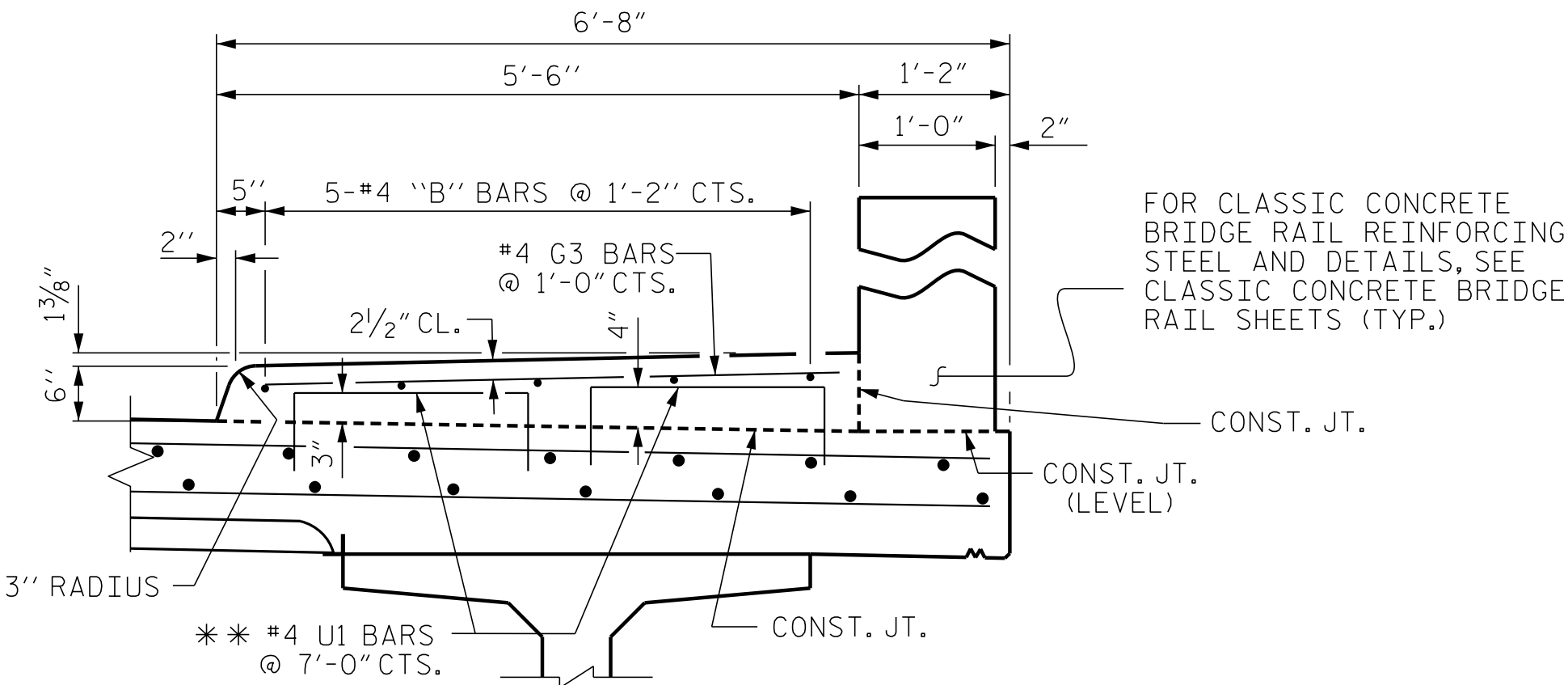
ALL STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

FOR SIDEWALK COVER PLATES, SEE "TYPICAL SECTION", SHEET 7 OF 7.



SECTION THRU SIDEWALK (LEFT SIDE)

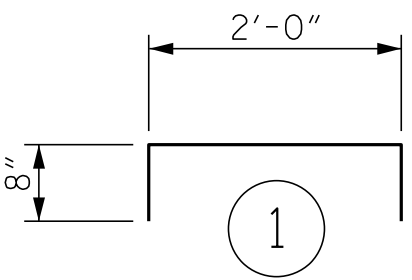
** #4 U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.



SECTION THRU SIDEWALK (RIGHT SIDE)

** #4 U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

—BAR TYPES—



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR SIDEWALK

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	75	#4	STR	39'-4"	1,971
* B2	30	#4	STR	35'-3"	706
* B3	15	#4	STR	34'-5"	345
* G1	287	#4	STR	10'-0"	1,917
* G2	1	#4	STR	15'-11"	11
* G3	287	#4	STR	5'-0"	959
* G4	1	#4	STR	7'-7"	5
* U1	252	#4	1	3'-4"	561

* EPOXY COATED
REINFORCING STEEL 6,475 LBS.

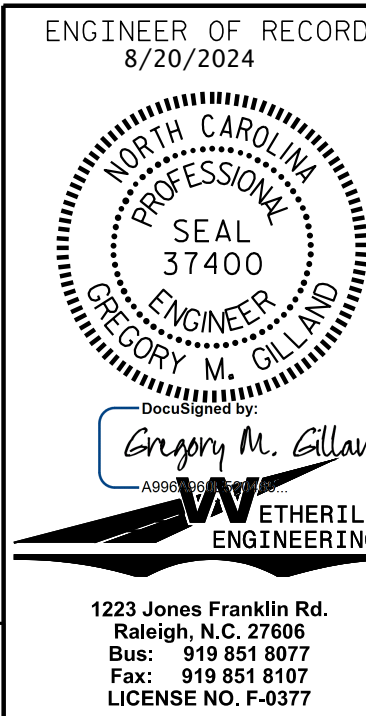
CLASS "AA" CONCRETE 118.9 C.Y.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAIL

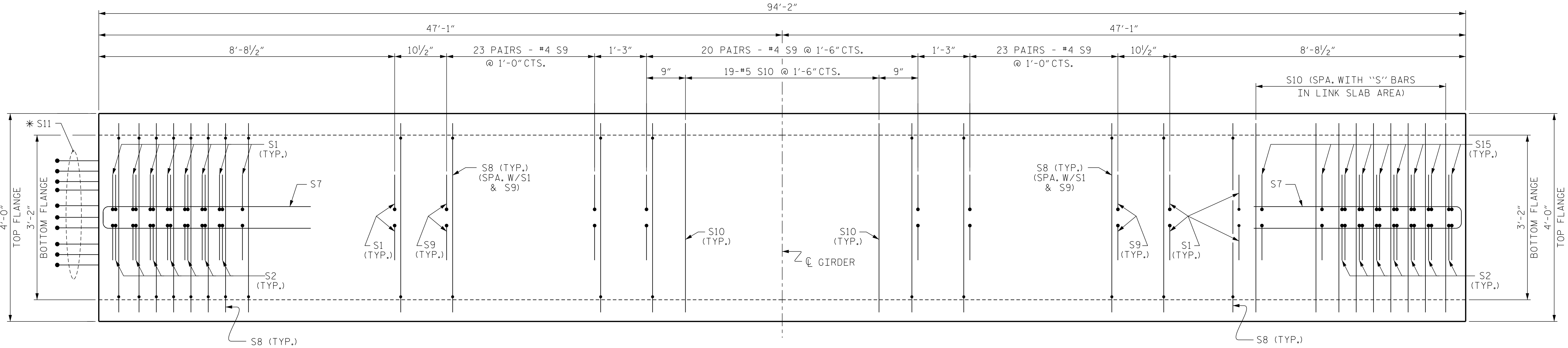
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-19
2			4			TOTAL SHEETS 64

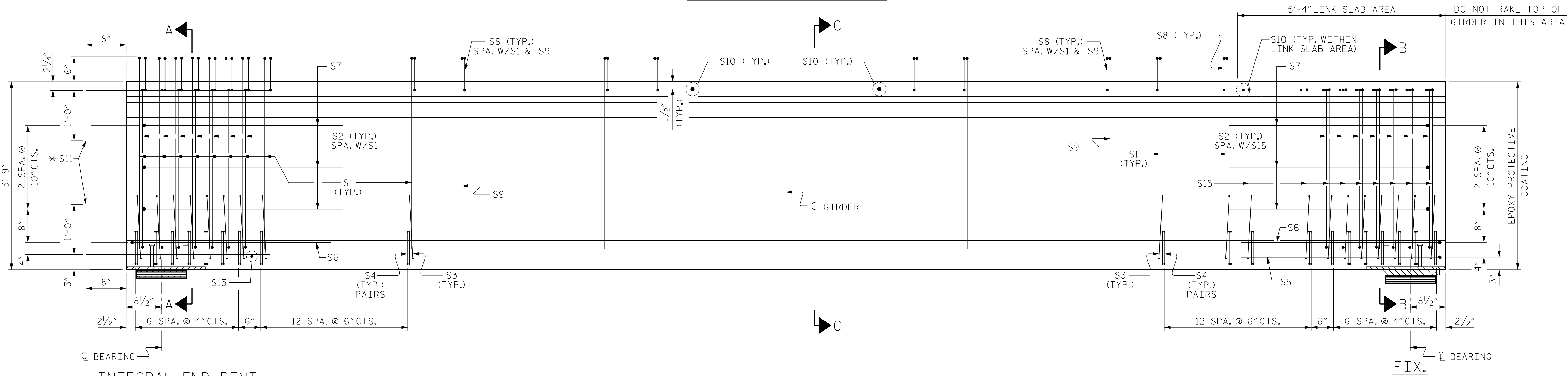
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : G. GILLAND DATE : 8/22

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-STR-2 (770175)_SMU_PCC.dgn 4/26/2024 7:51:41 AM



PLAN OF GIRDER



ELEVATION OF GIRDER

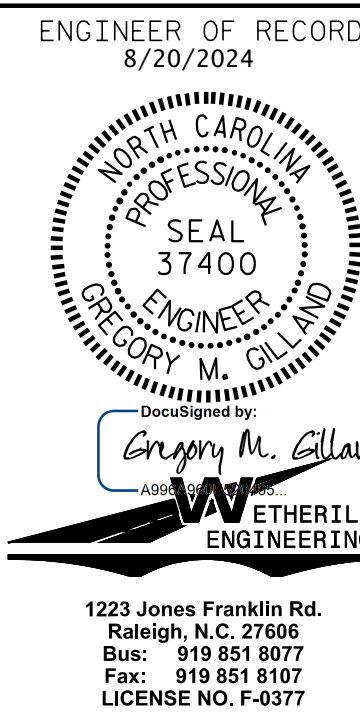
(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

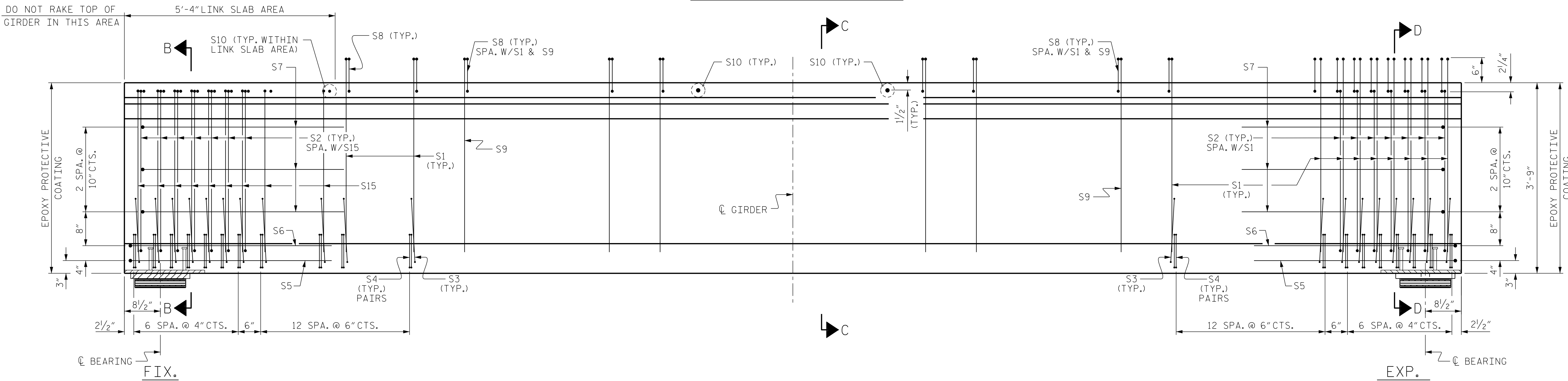
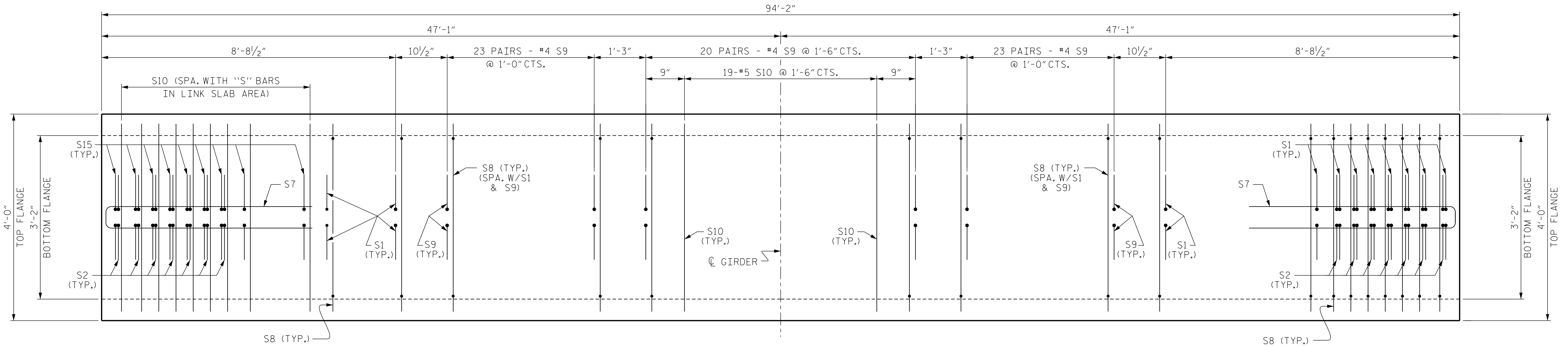
SHEET 1 OF 7

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : J. DILWORTH DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-20
2			4			
TOTAL SHEETS						64



(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 7

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

REGISTERED ENGINEER
GREGORY M. GILLAND

Designed by
Gregory M. Gilland

WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

45" FIB PRESTRESSED
CONCRETE GIRDER
LINK SLAB
SPAN B

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

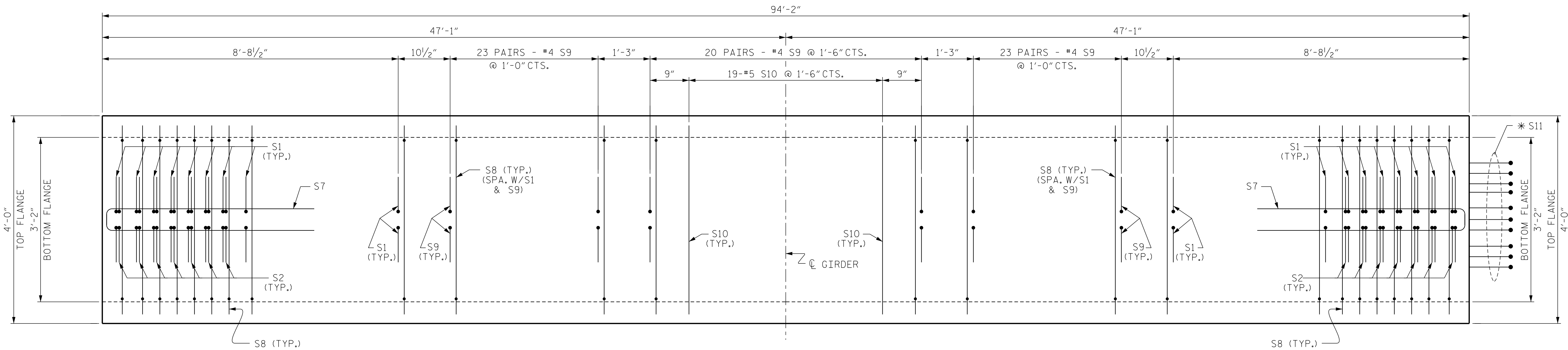
SHEET NO.
S-21
TOTAL SHEETS
64

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : J. DILWORTH DATE : 8/22

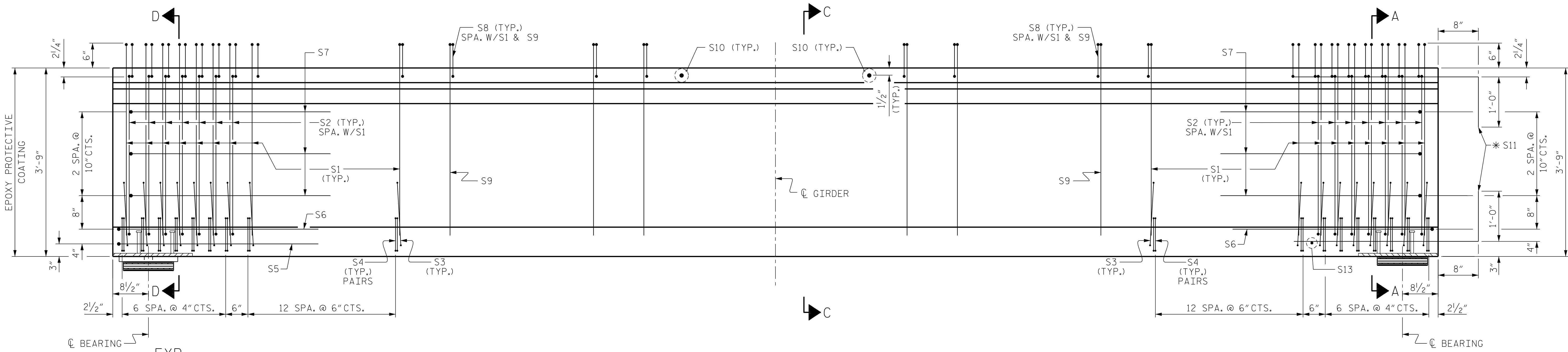
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-Str-2 (770175)_SMU_PCC.dgn
4/26/2024 7:52:11 AM

PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001.B-5985-STR-2 (770175)_SMU_PCC.dgn 4/26/2024 7:53:21 AM



PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

INTEGRAL END BENT

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 3 OF 7

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : J. DILWORTH DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

REGISTERED
ENGINEER
GREGORY M. GILLAND

Decommissioned by:
Gregory M. Gilland

ETHERILL
ENGINEERING

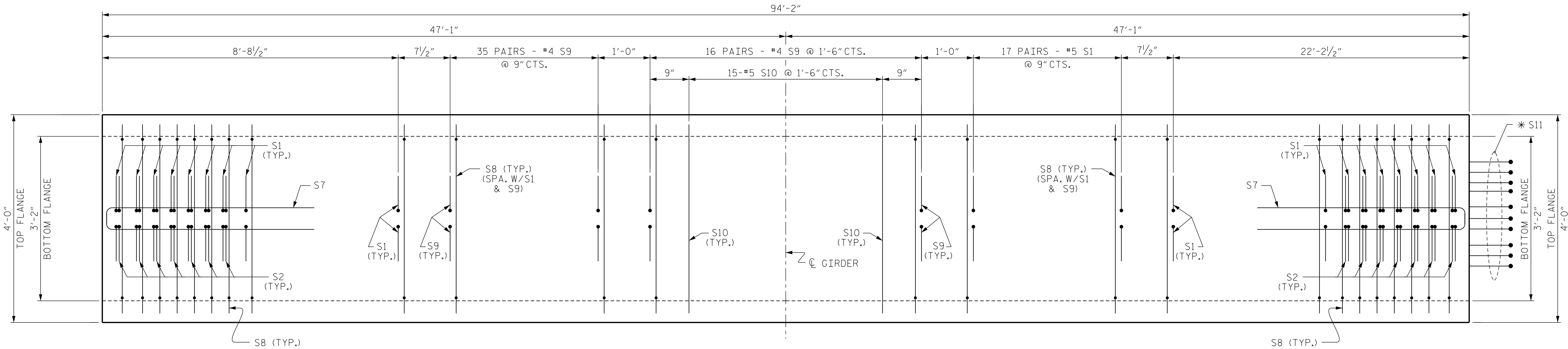
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

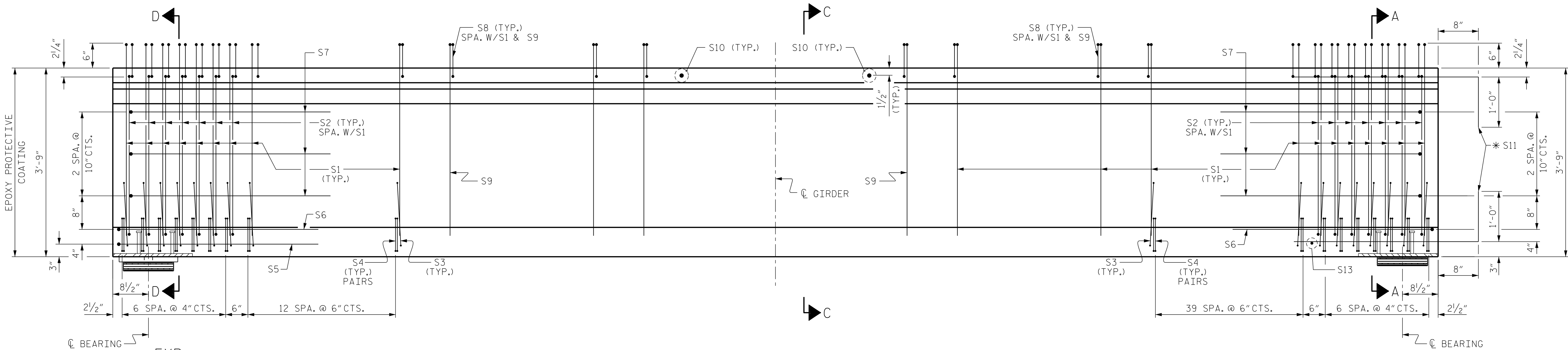
45" FIB PRESTRESSED
CONCRETE GIRDER
SPAN C
INTERIOR GDRS. C2-C7

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-22
TOTAL
SHEETS
64



PLAN OF GIRDER



ELEVATION OF GIRDER

(FOR QUANTITIES, WEB HOLES, SECTIONS AND STRAND LAYOUT, SEE SHEETS 5 & 6 OF 7)

INTEGRAL END BENT

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 4 OF 7

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : J. DILWORTH DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

DESIGNED BY
GREGORY M. GILLAND

DocuSigned by
Gregory M. Gilland
ETHERILL
ENGINEERING

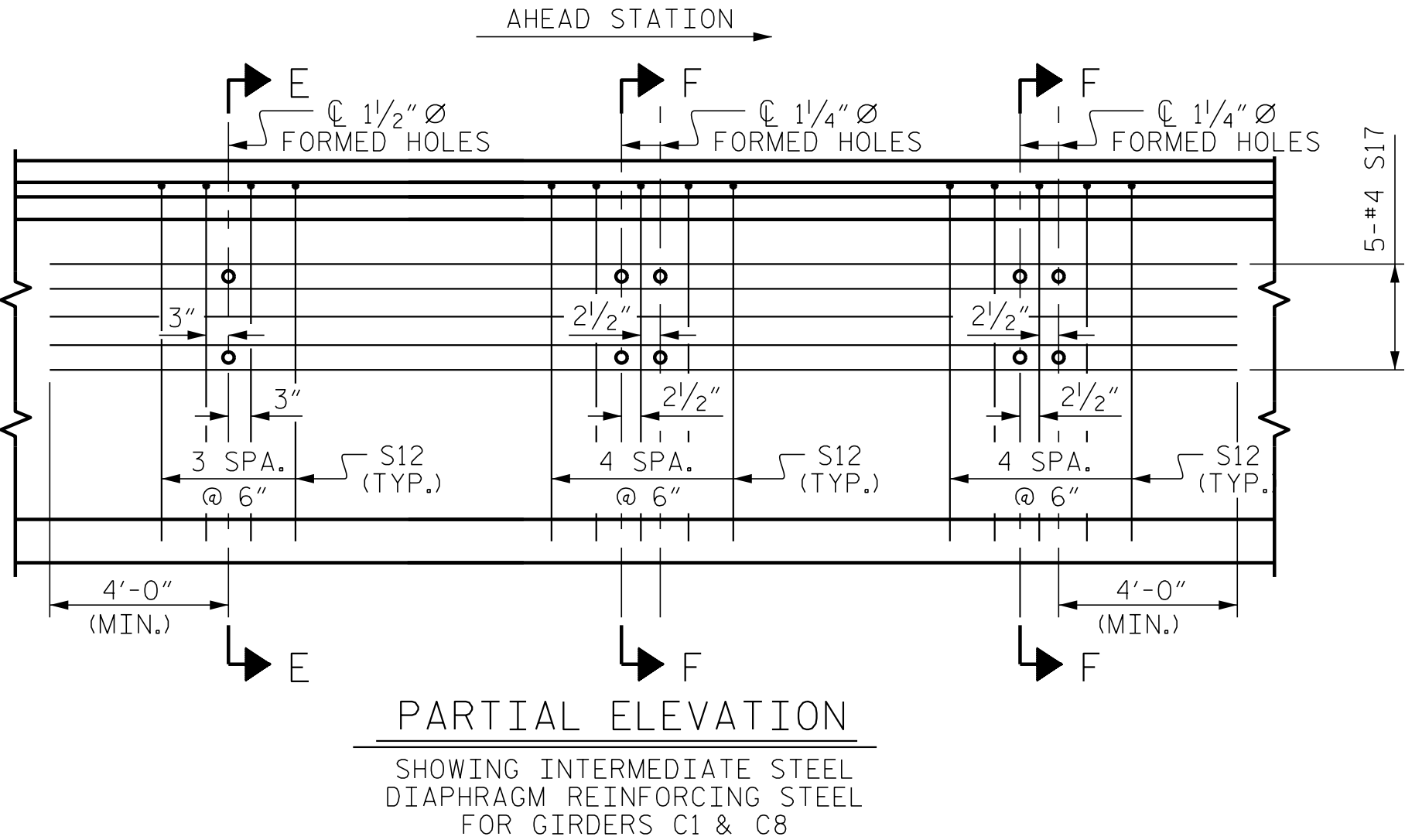
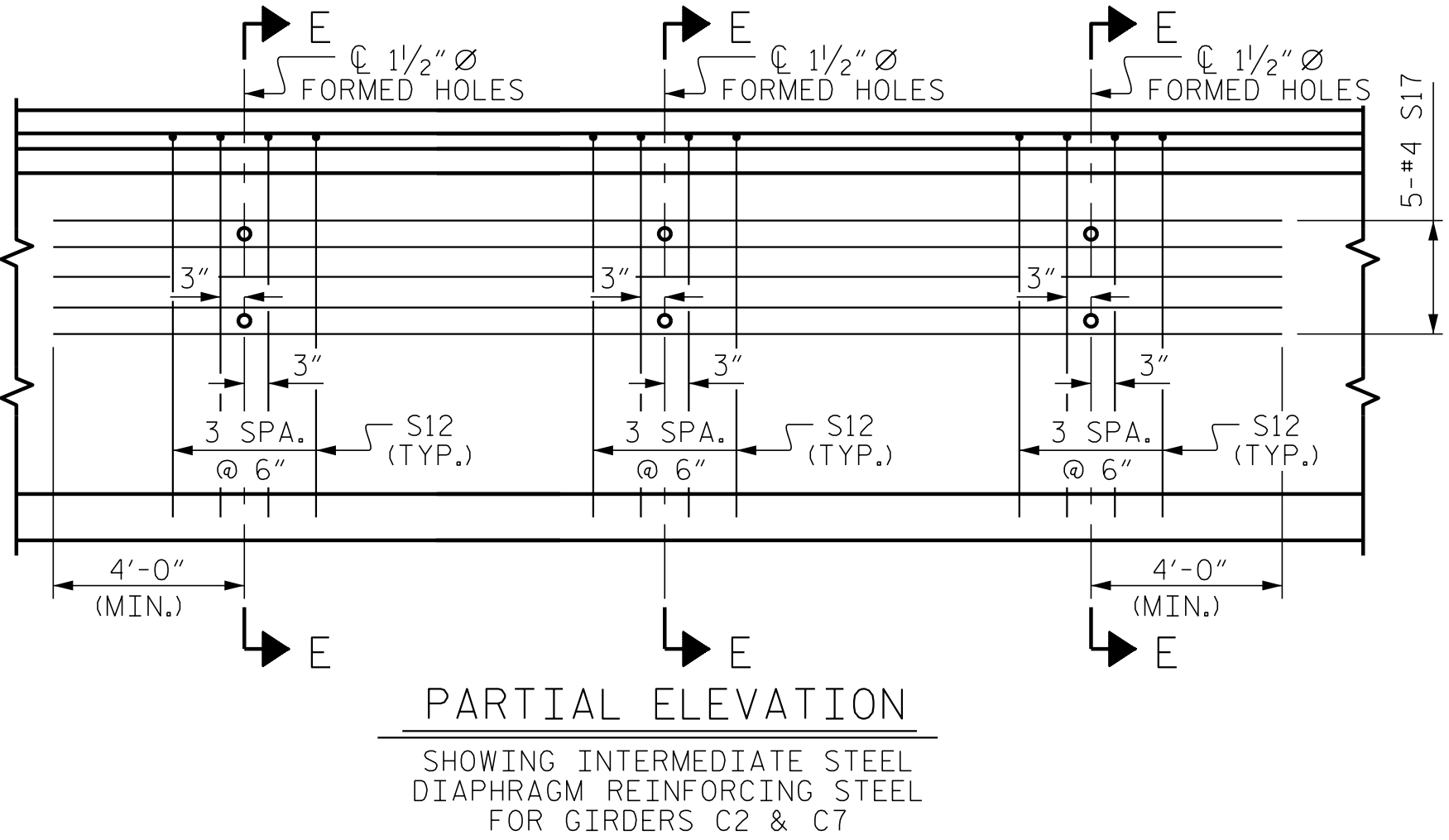
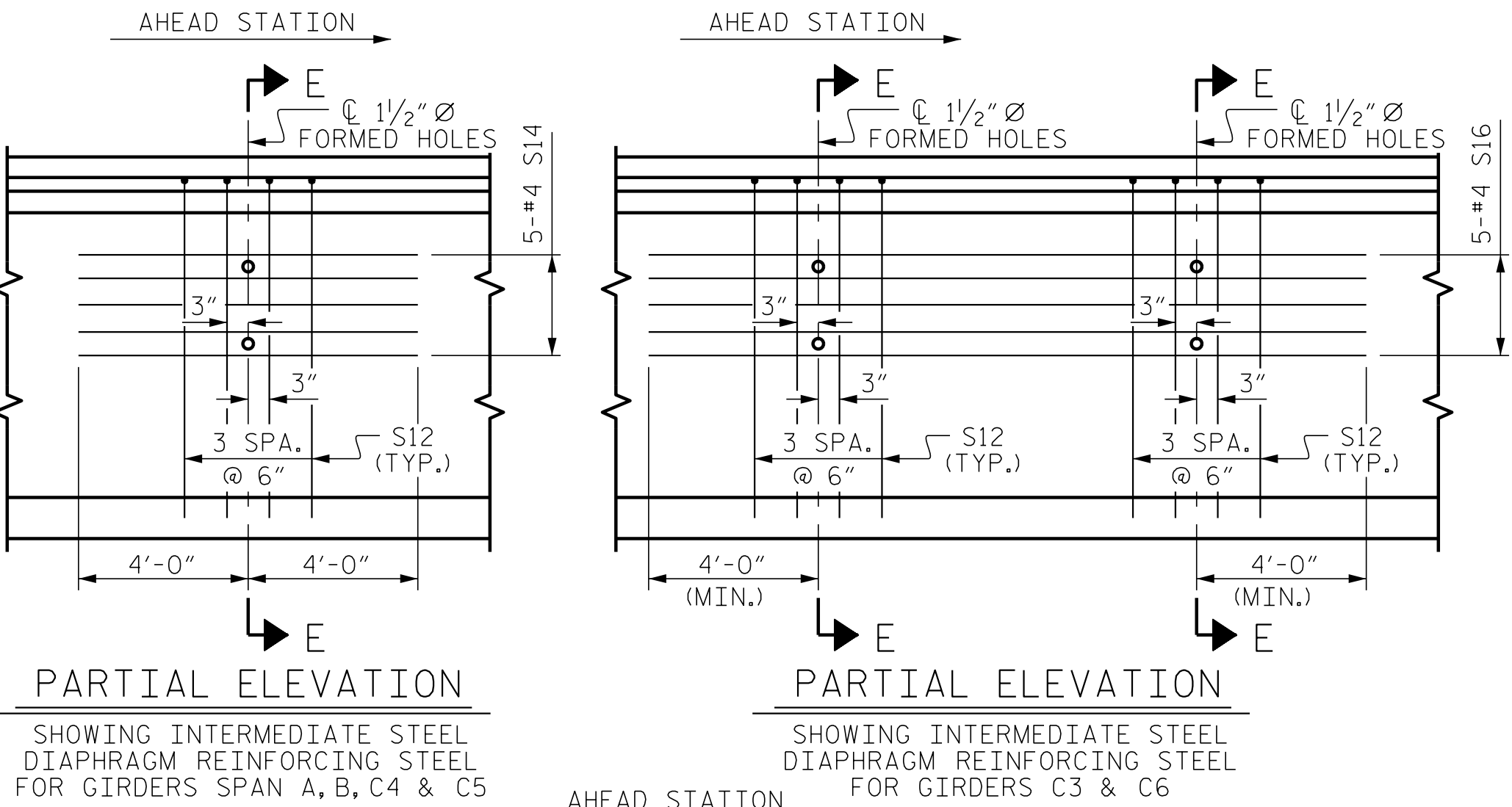
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

45" FIB PRESTRESSED
CONCRETE GIRDER
SPAN C
EXTERIOR GDRS. C1 & C8

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-23
TOTAL
SHEETS
64



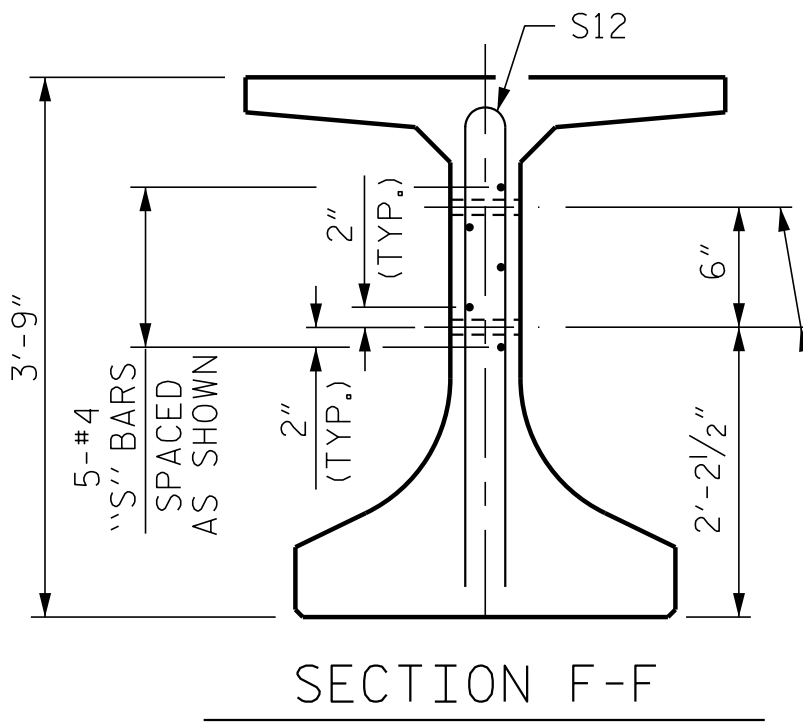
QUANTITIES FOR GIRDERS				
	REINFORCING STEEL	7,500 PSI CONCRETE	10,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
SPAN	LB.	C.Y.	C.Y.	No.
A	2,141	21.1		42
B	2,054	21.1		42
C1 & C8	3,171		21.1	64
C2 & C7	2,403	21.1		42
C3 & C6	2,328	21.1		42
C4 & C5	2,237	21.1		42

DRAWN BY : D. HODGE DATE : 3/22
CHECKED BY : J. DILWORTH DATE : 8/22

0.6" Ø L. R. GRADE 270 STRANDS - SPAN A					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	54	#5	5	4'-7"	258
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	150	#5	7	4'-8"	730
S9	132	#4	5	4'-7"	404
S10	32	#5	STR	3'-8"	122
*S11	20	#5	STR	4'-8"	97
S12	4	#5	6	7'-0"	29
S13	1	#3	STR	2'-10"	1
S14	5	#4	STR	8'-0"	27
S15	26	#5	5	3'-11"	106

0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C1 & C8					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	168	#5	5	4'-7"	803
S2	28	#5	4	4'-3"	124
S3	67	#3	2	3'-4"	84
S4	134	#3	1	4'-3"	214
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	242	#5	7	4'-8"	1,178
S9	102	#4	5	4'-7"	312
S10	15	#5	STR	3'-8"	57
*S11	20	#5	STR	4'-8"	97
S12	14	#5	6	7'-0"	102
S13	1	#3	STR	2'-10"	1
S17	5	#4	STR	40'-0"	134

0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C2 & C7					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#5	5	4'-7"	382
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	176	#5	7	4'-8"	857
S9	132	#4	5	4'-7"	404
S10	19	#5	STR	3'-8"	73
*S11	20	#5	STR	4'-8"	97
S12	12	#5	6	7'-0"	88
S13	1	#3	STR	2'-10"	1
S17	5	#4	STR	40'-0"	134



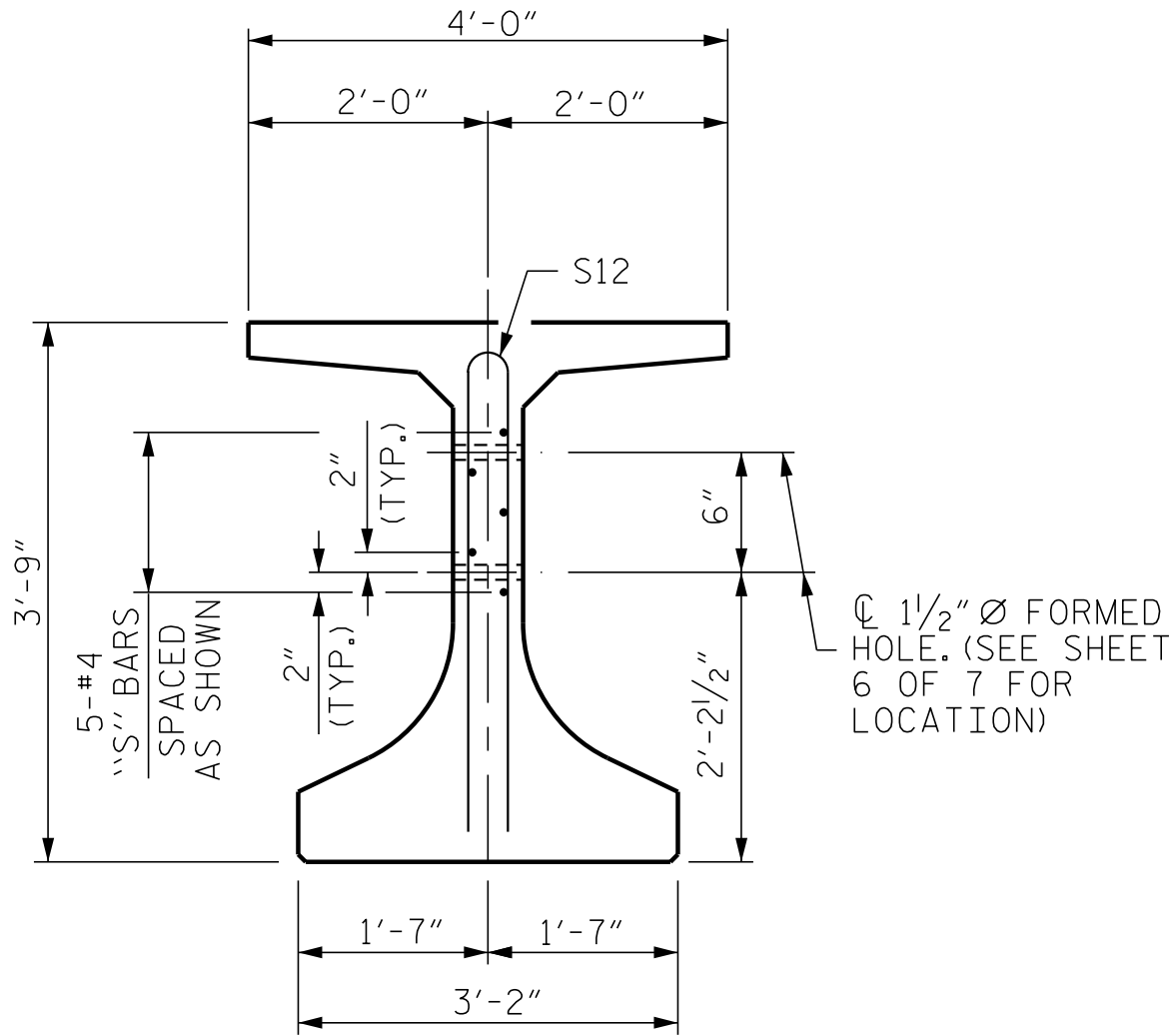
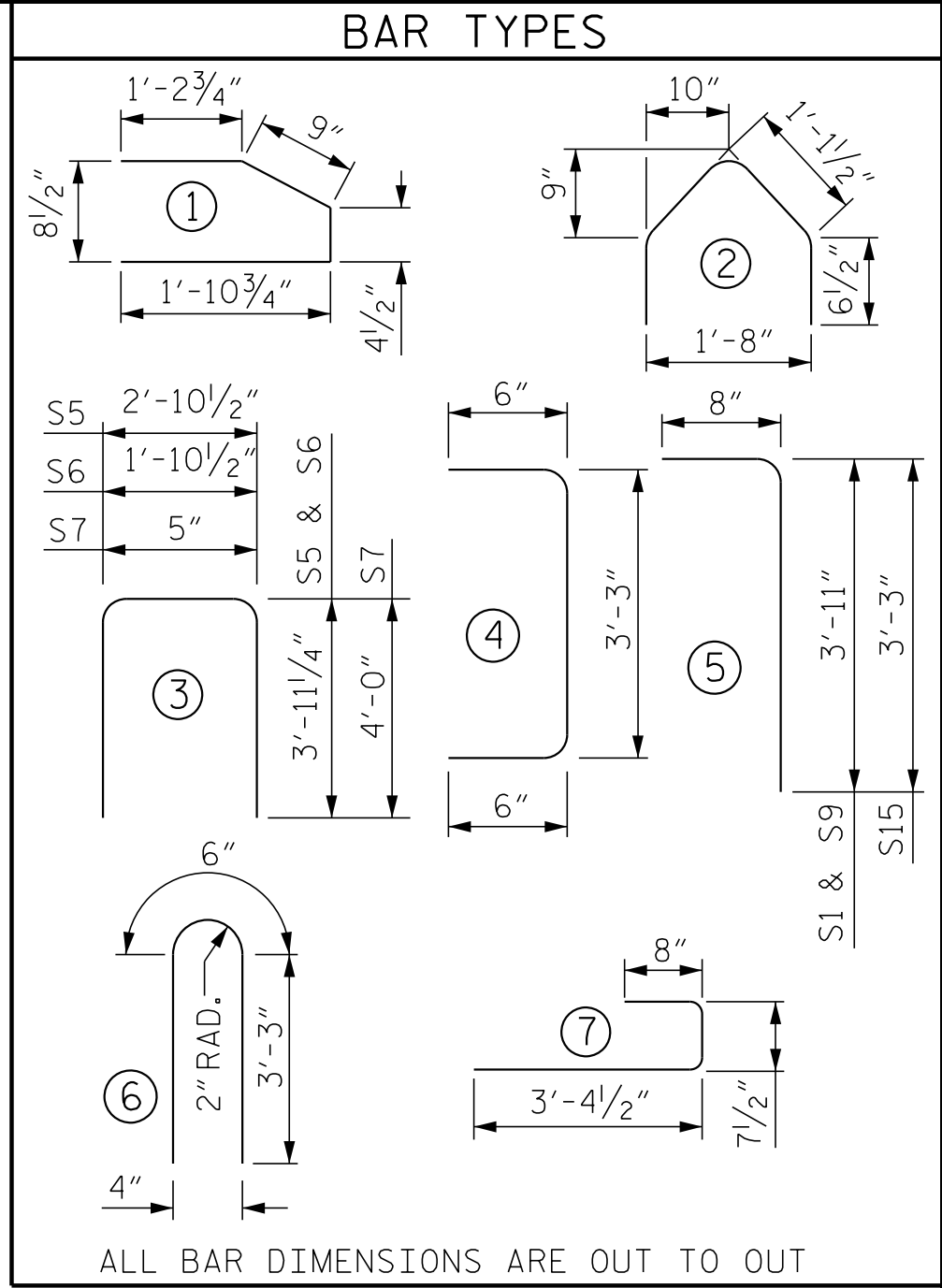
1/4" DIAMETER HOLES SHALL BE FORMED WITH 1/4" Ø SCH. 80 STEEL PIPE. PIPE SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. PIPE SHALL MEET THE REQUIREMENTS OF ASTM F1083 WITH A MINIMUM YIELD STRENGTH OF 30 KSI. SEE SHEET 6 OF 7 FOR LOCATION.

0.6" Ø L. R. GRADE 270 STRANDS - SPAN B					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	54	#5	5	4'-7"	258
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	2	#5	3	10'-9"	22
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	150	#5	7	4'-8"	730
S9	132	#4	5	4'-7"	404
S10	32	#5	STR	3'-8"	122
S12	4	#5	6	7'-0"	29
S14	5	#4	STR	8'-0"	27
S15	26	#5	5	3'-11"	106
0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C3 & C6					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#5	5	4'-7"	382
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	176	#5	7	4'-8"	857
S9	132	#4	5	4'-7"	404
S10	19	#5	STR	3'-8"	73
*S11	20	#5	STR	4'-8"	97
S12	8	#5	6	7'-0"	58
S13	1	#3	STR	2'-10"	1
S16	5	#4	STR	26'-8"	89
0.6" Ø L. R. GRADE 270 STRANDS SPAN C GDRS. C4 & C5					
AREA (SQUARE INCHES)		ULTIMATE STRENGTH (LBS. PER STRAND)		APPLIED PRESTRESS (LBS. PER STRAND)	
0.217		58,600		43,950	
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#5	5	4'-7"	382
S2	28	#5	4	4'-3"	124
S3	40	#3	2	3'-4"	50
S4	80	#3	1	4'-3"	128
S5	1	#5	3	10'-9"	11
S6	2	#5	3	9'-9"	20
S7	6	#4	3	8'-5"	34
S8	176	#5	7	4'-8"	857
S9	132	#4	5	4'-7"	404
S10	19	#5	STR	3'-8"	73
*S11	20	#5	STR	4'-8"	97
S12	4	#5	6	7'-0"	29
S13	1	#3	STR	2'-10"	1
S14	5	#4	STR	8'-0"	27

* NOTE: S11 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

GIRDERS REQUIRED			
SPAN	NUMBER	LENGTH	TOTAL
A	8	94'-2"	753.33'
B	8	94'-2"	753.33'
C	8	94'-2"	753.33'
TOTAL	24		2,260'

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SECTION E-E

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 5 OF 7

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

REGISTERED
ENGINEER
MICHAEL M. GILLAND

DocuSign by
ETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

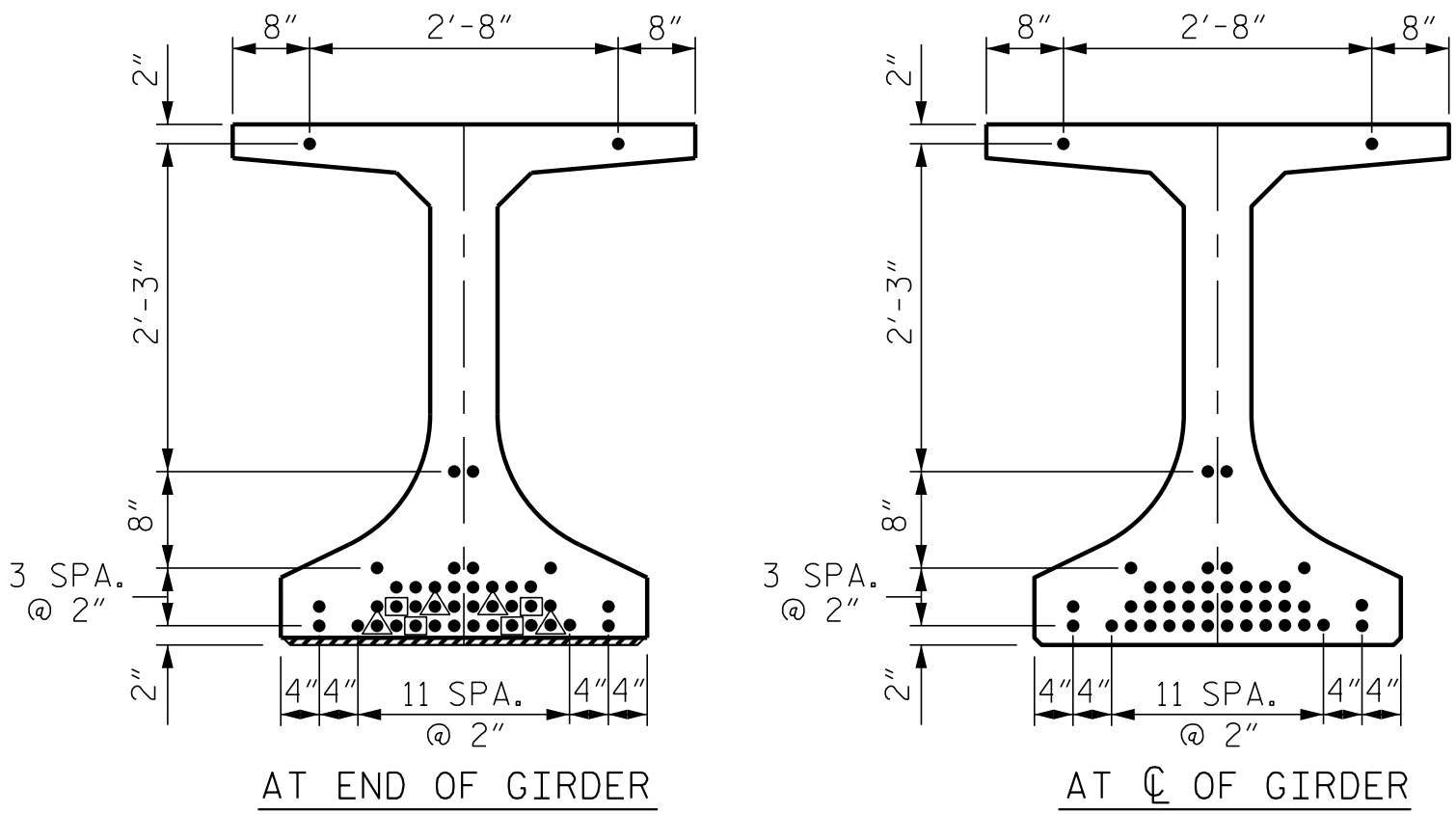
45" FIB PRESTRESSED
CONCRETE GIRDER

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

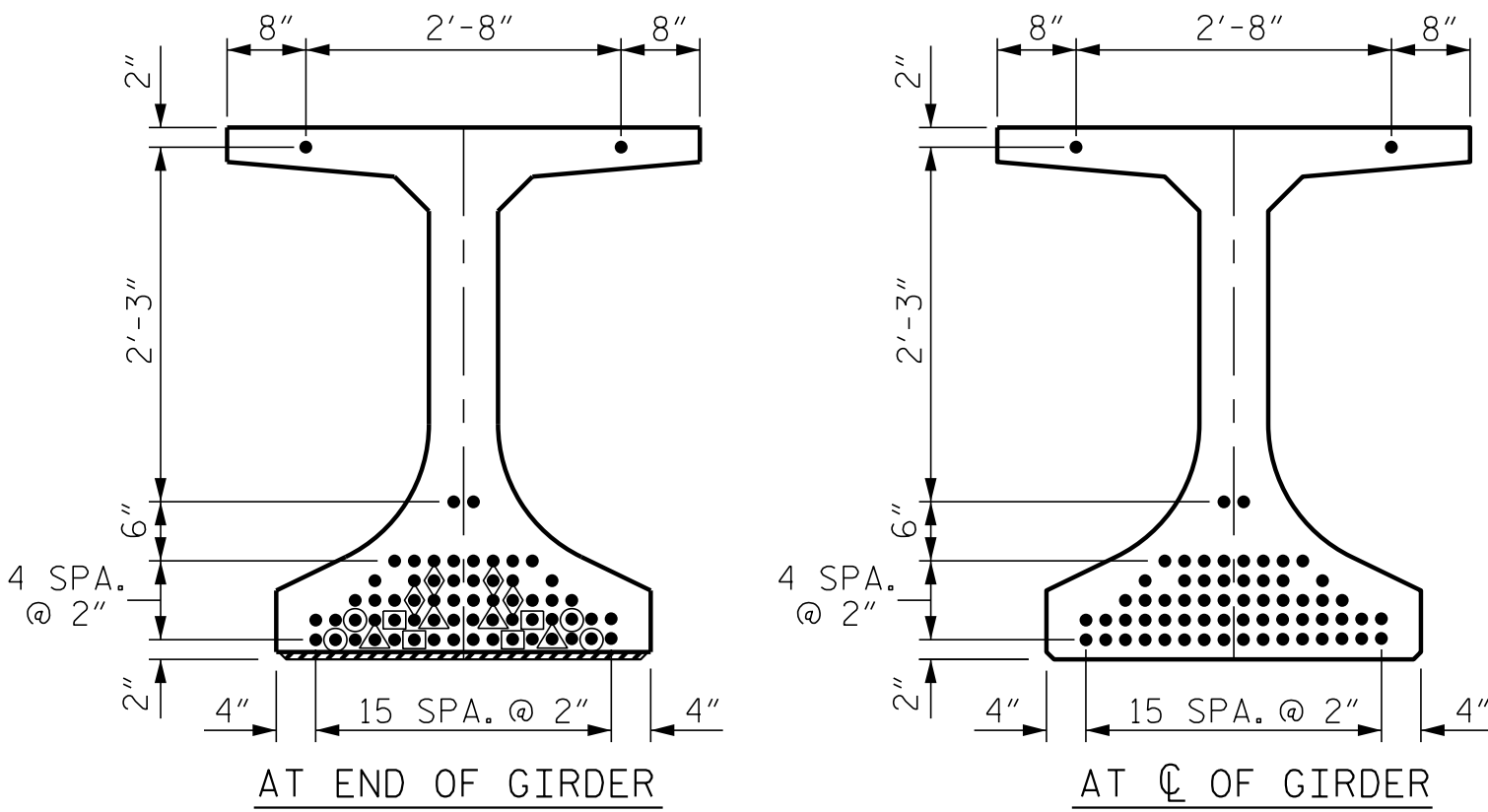
SHEET NO.
S-24
TOTAL SHEETS
64

DEBONDING LEGEND

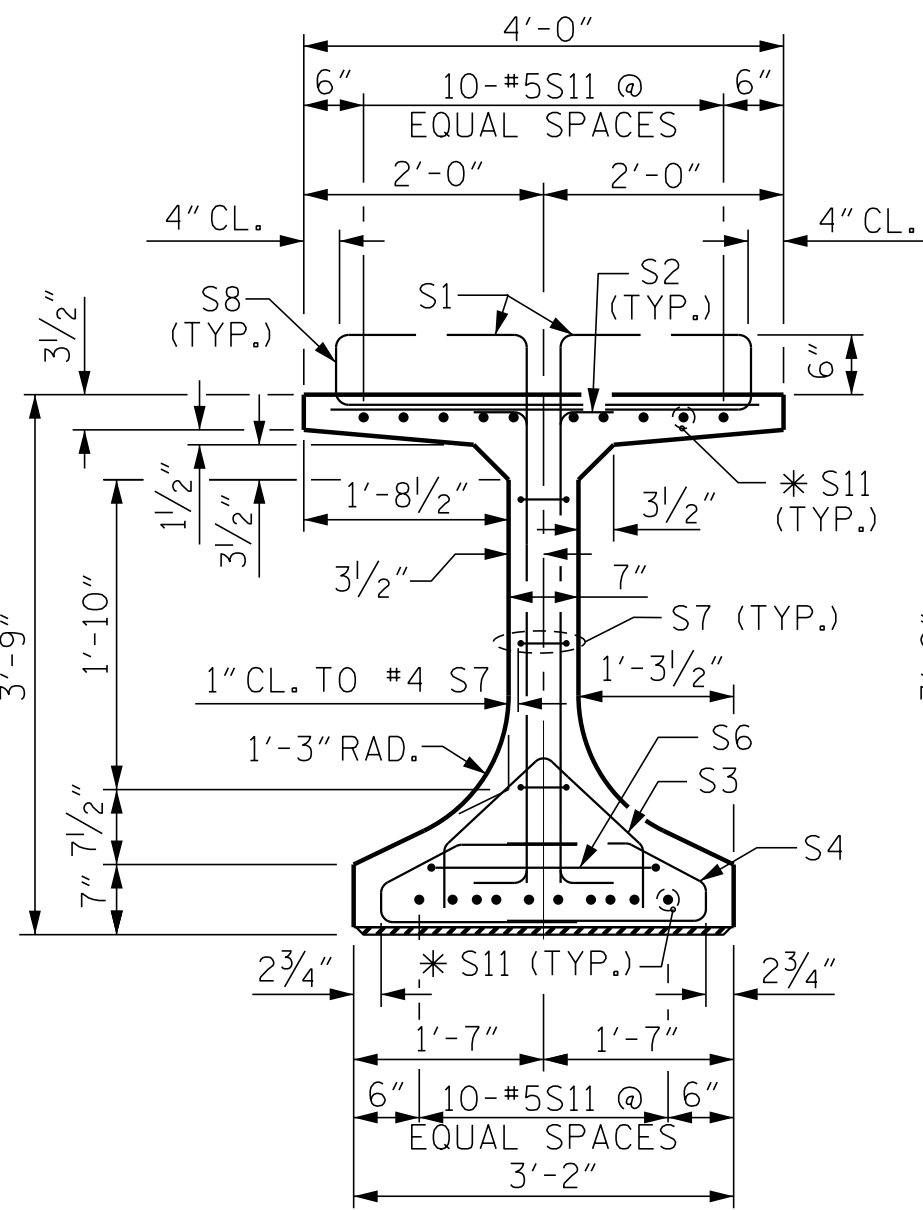
- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 5'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 15'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 20'-0" FROM END OF GIRDER



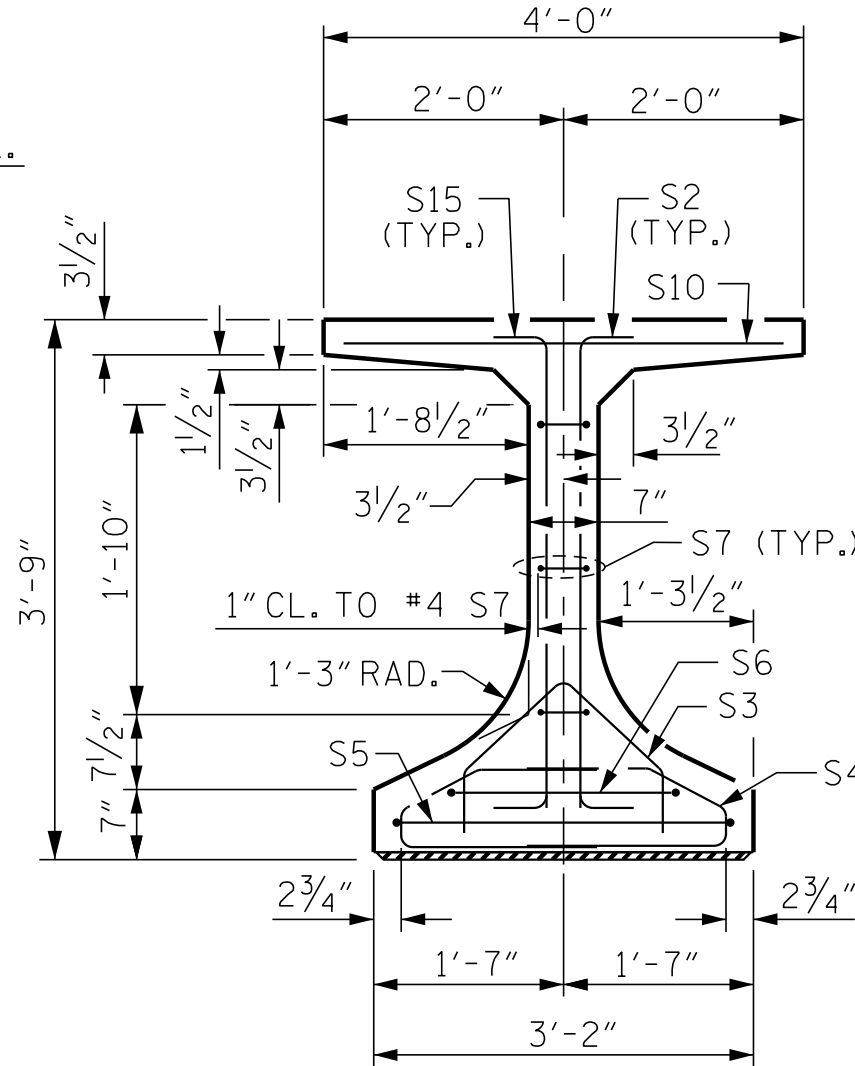
0.6" Ø LOW RELAXATION STRAND LAYOUT - SPANS A, B & C INT.



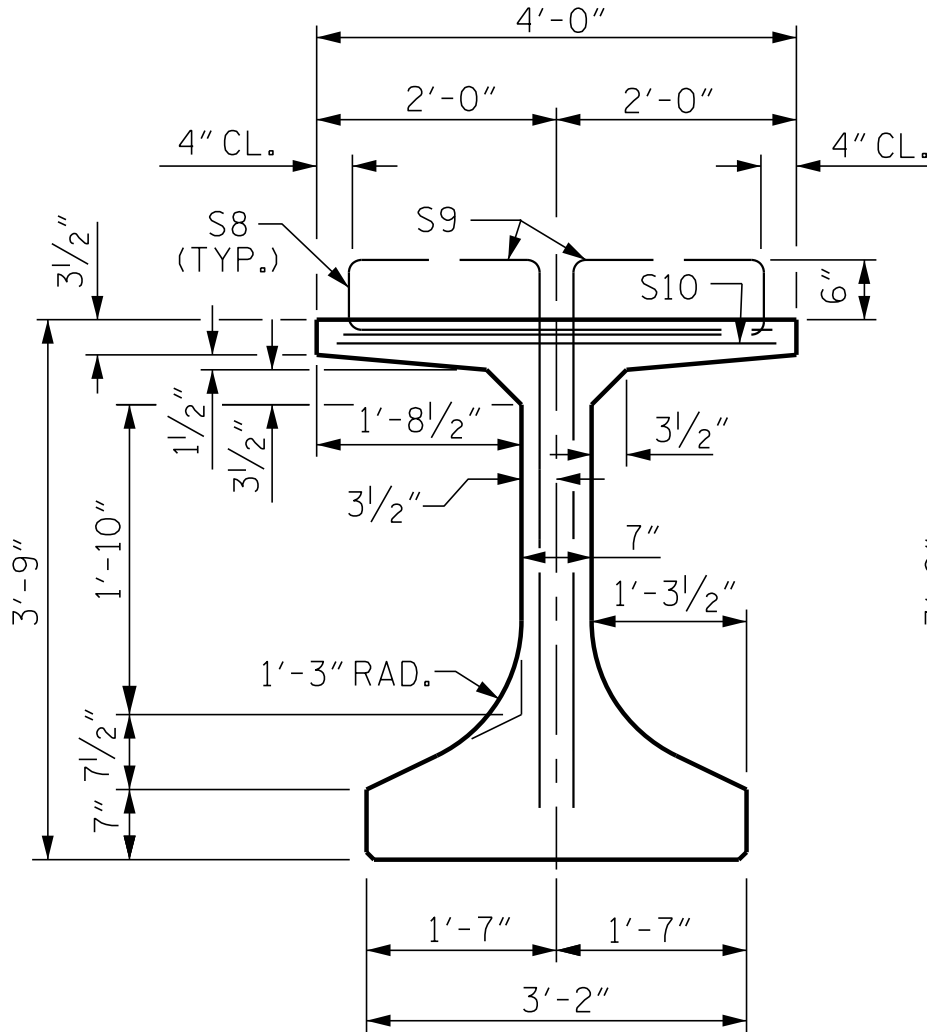
0.6" Ø LOW RELAXATION STRAND LAYOUT - SPAN C EXT.



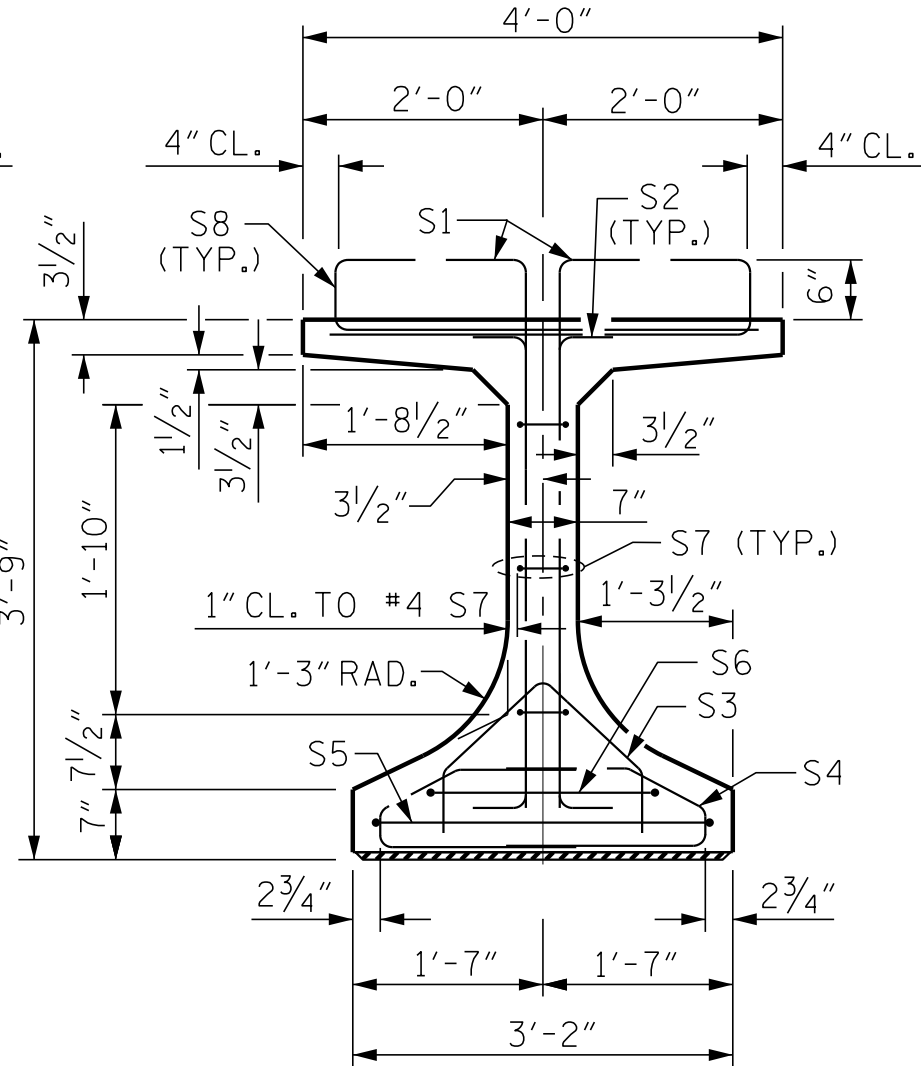
SECTION A-A



SECTION B-B



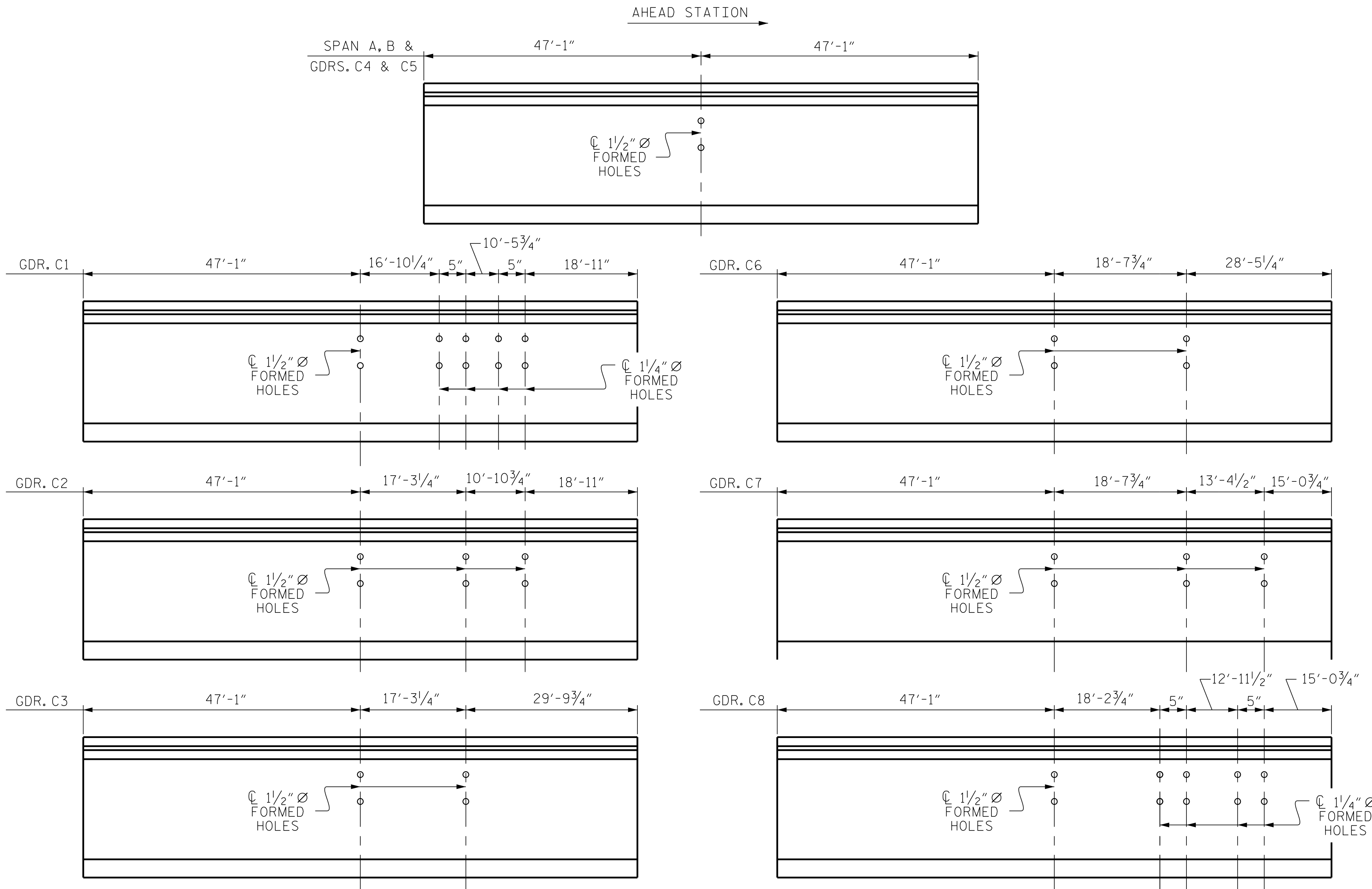
SECTION C-C



SECTION D-D

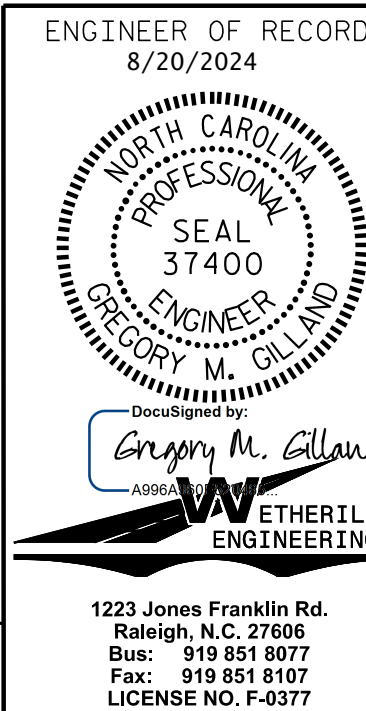
LOCATION OF BOLT HOLES IN GIRDERS

SHEAR STIRRUPS MAY BE SHIFTED SLIGHTLY TO AVOID BOLT HOLES IN GIRDER



PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 6 OF 7



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

45" FIB PRESTRESSED
CONCRETE GIRDER

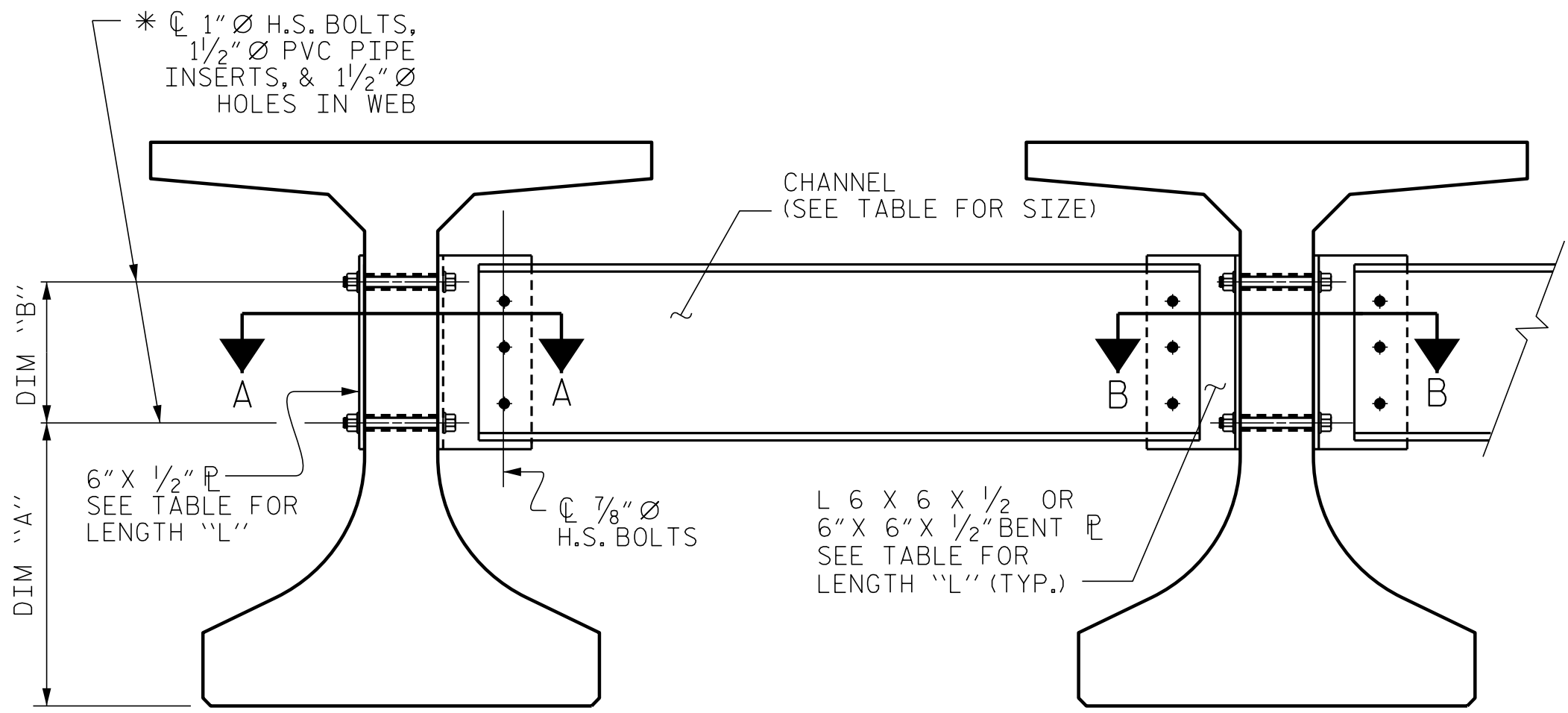
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-25
2			4			
TOTAL SHEETS						64

DRAWN BY: D. HODGE DATE: 3/22
CHECKED BY: J. DILWORTH DATE: 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

PA:2018\18156.01 B-5985 RobesonStructuresStr-2 (770175)NDGN402_001 B-5985-SITE 2 770175_SKU_PCC.dgn 4/26/2024 7:55:52 AM

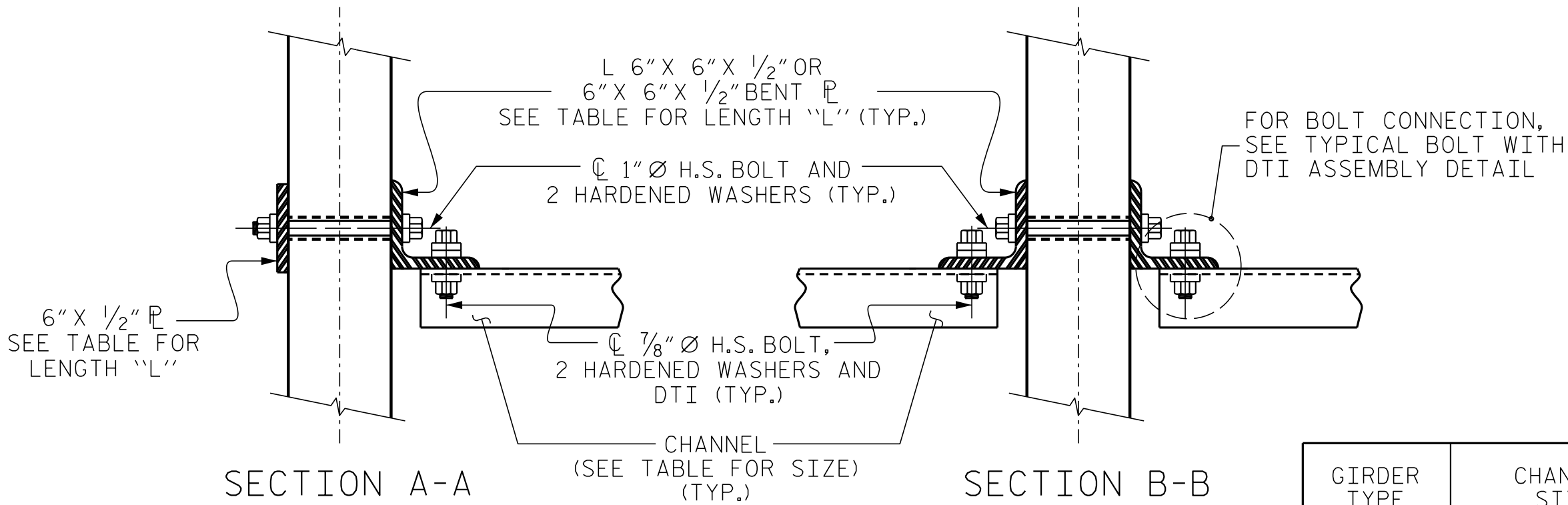


EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

* $\frac{1}{4}$ " $\varnothing$ HOLES REQUIRED IN GIRDERS C1 AND C8 FOR W36X135 CONNECTIONS, SEE SUPERSTRUCTURE STRUCTURAL STEEL, SHEET 2 OF 2 FOR DETAILS.



CONNECTION DETAILS

EMBEDDED PLATE NOTES

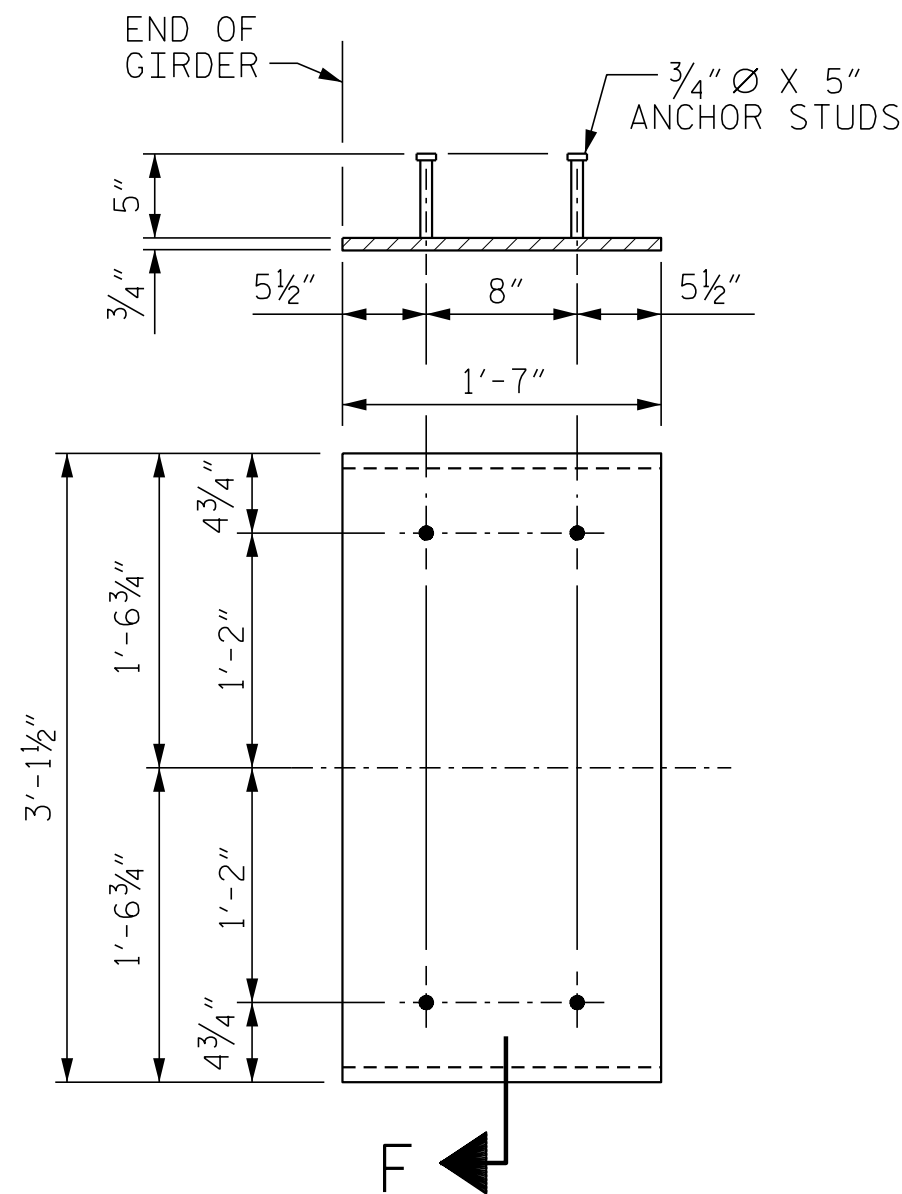
EMBEDDED PLATE SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

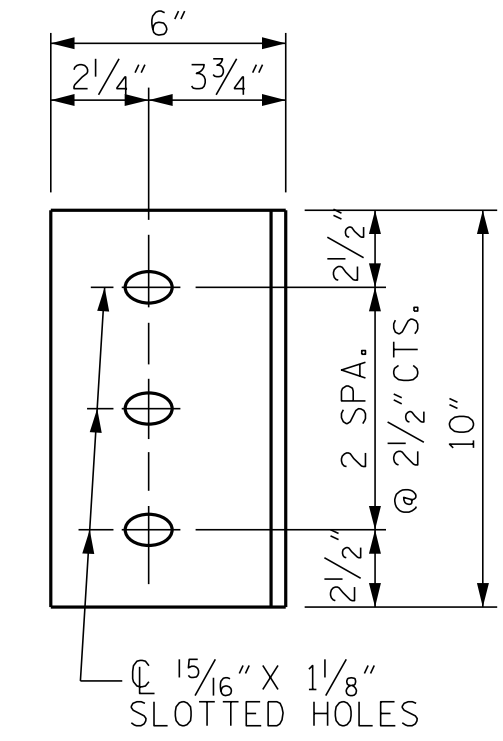
ALL SURFACES OF EMBEDDED BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36 OR 50.

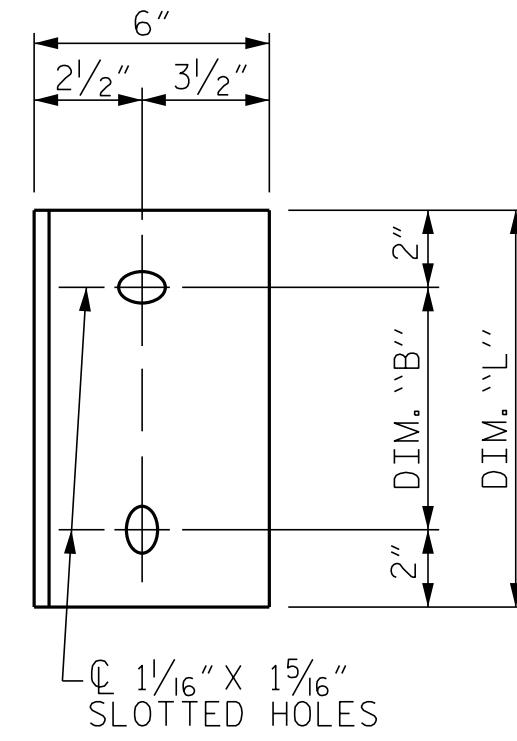
TABLE				
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
45" FIB	MC 12 x 31	2'-2 $\frac{1}{2}$ "	6"	10"



EMBEDDED BEARING PLATE PLAN



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

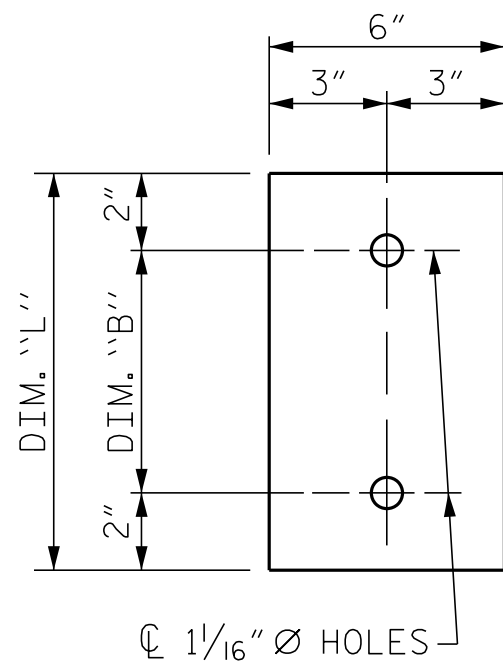
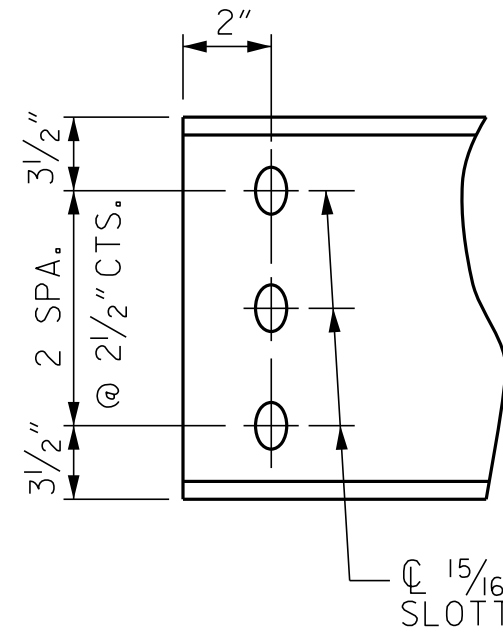
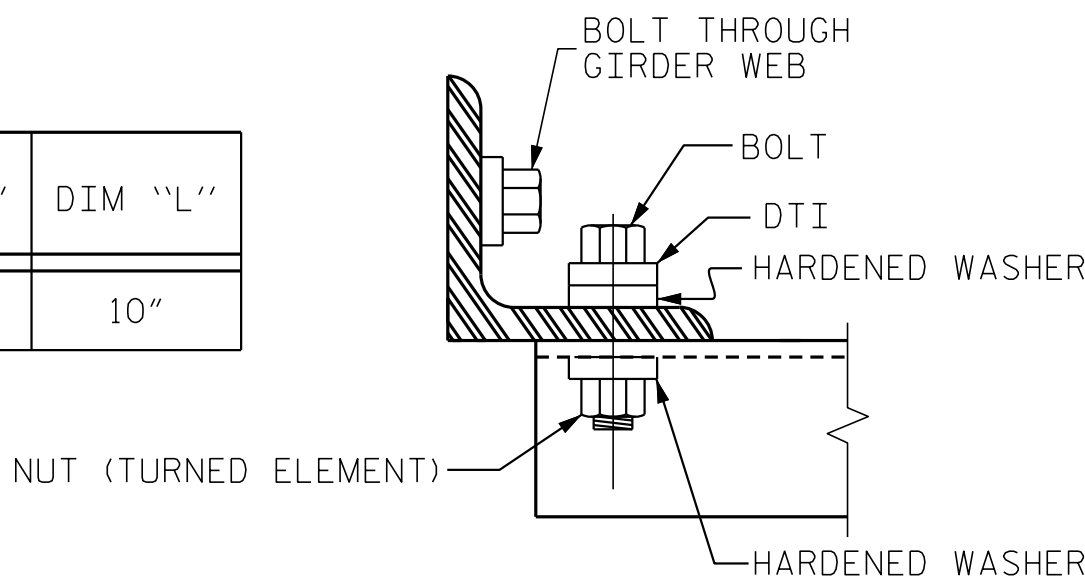


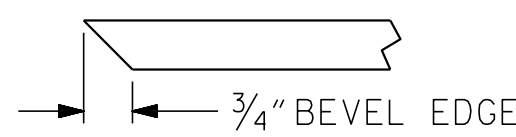
PLATE DETAILS



CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL



SECTION "F"

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL $\frac{1}{4}$ TURN.

THE PLATES, BENT PLATES, CHANNELS, AND ANGLES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST $\frac{1}{4}$ " PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

GIRDER NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,000 PSI FOR SPANS A & B AND 5,000 PSI FOR SPAN C INTERIOR GIRDERS AND 8,000 PSI FOR SPAN C EXTERIOR GIRDERS.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND WITHIN THE REGION OF THE LINK SLAB, SHALL BE RAKED TO A DEPTH OF $\frac{1}{4}$ ".

THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS/STUDS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

AT FABRICATOR'S OPTION, GIRDERS FOR SPAN A & B, AND INTERIOR GIRDERS OF SPAN C MAY BE CAST IN BED WITH EXTERIOR GIRDERS OF SPAN C. ADDITIONAL STRANDS ONLY IN EXTERIOR GIRDERS OF SPAN C SHALL BE FULL LENGTH DEBONDED IN OTHER GIRDERS AT NO ADDITIONAL COST, SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

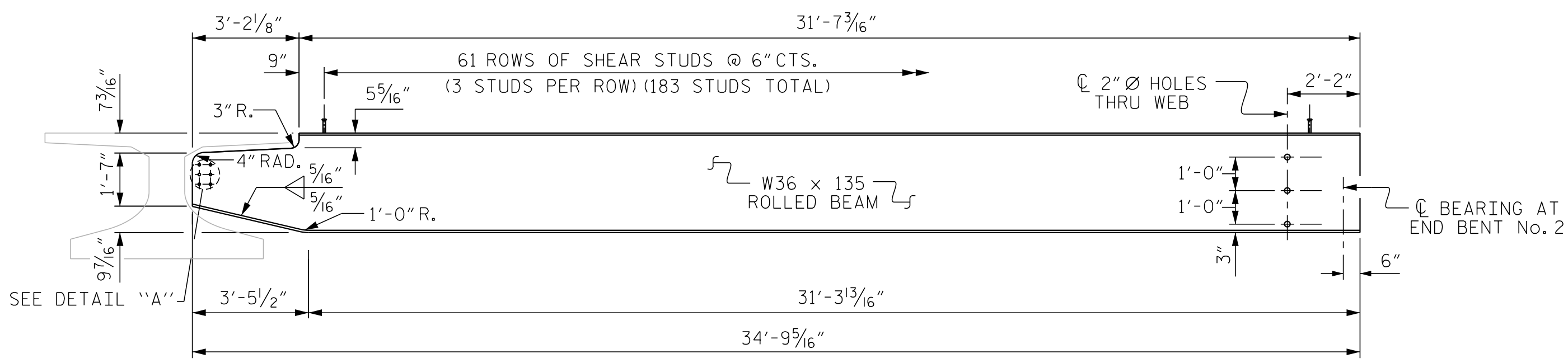
SHEET 7 OF 7

DRAWN BY : D. HODGE DATE : 4/22
CHECKED BY : J. DILWORTH DATE : 8/22

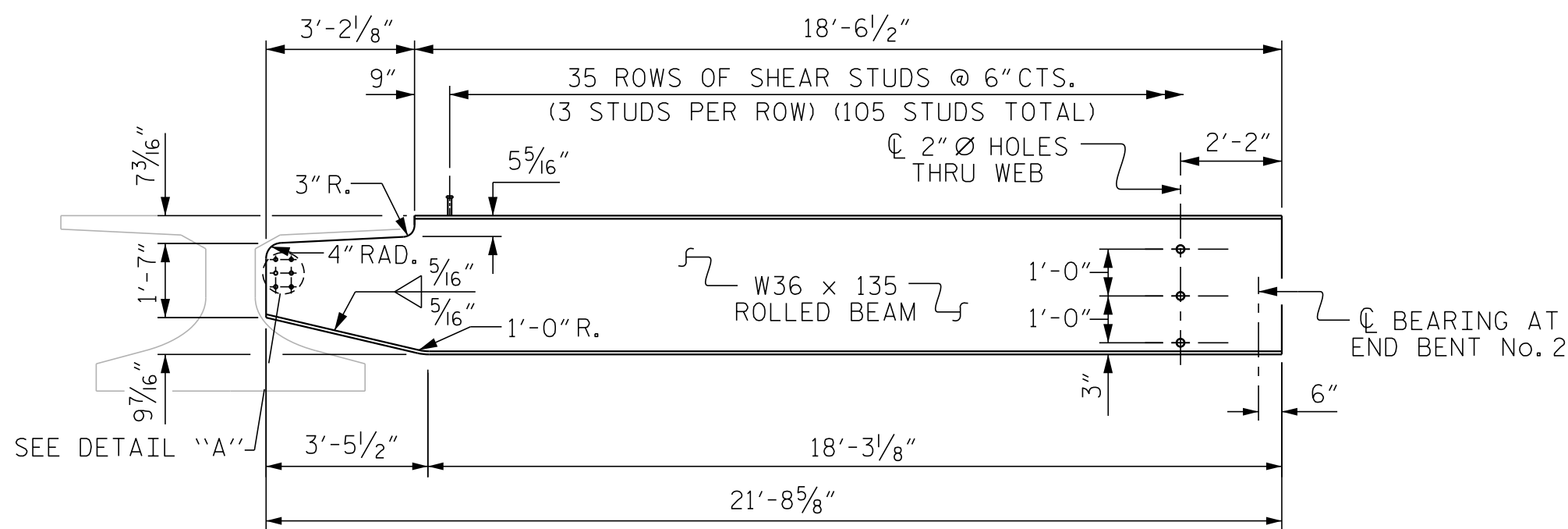
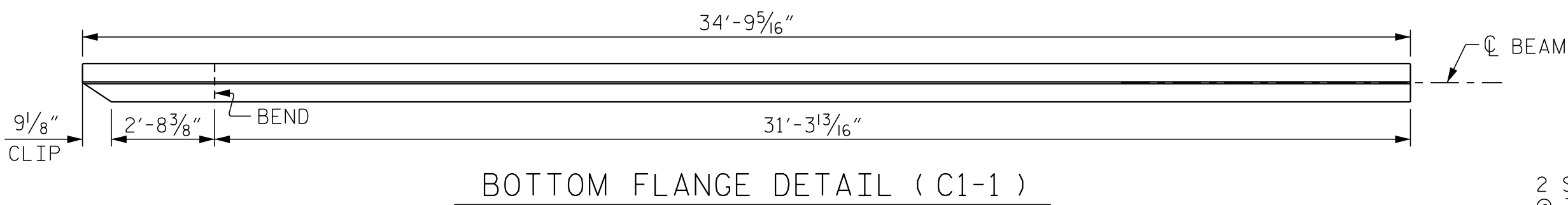
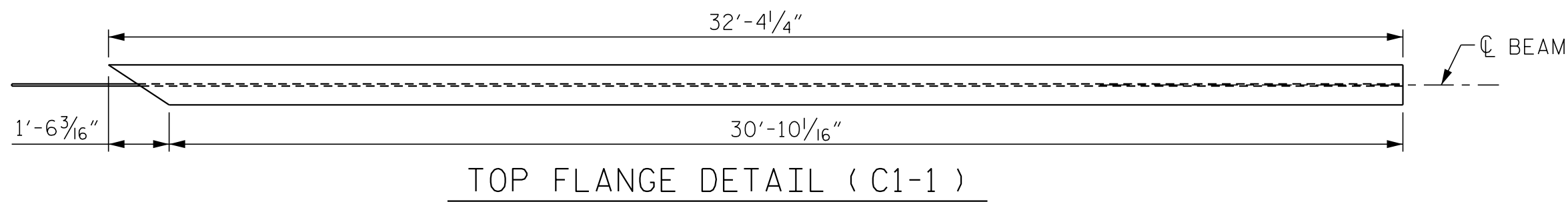
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD 8/20/2024 DESIGNED BY: ETHERILL ENGINEERING 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH INTERMEDIATE STEEL DIAPHRAGMS FOR 45" FIB & GIRDER DETAILS				
REVISIONS				SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			64

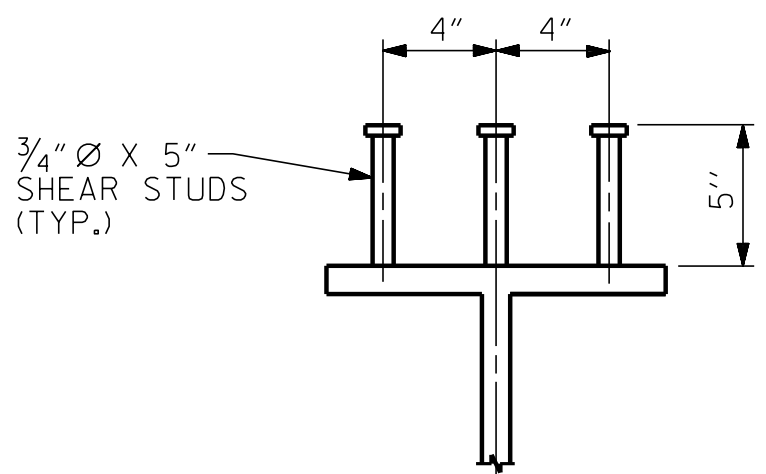
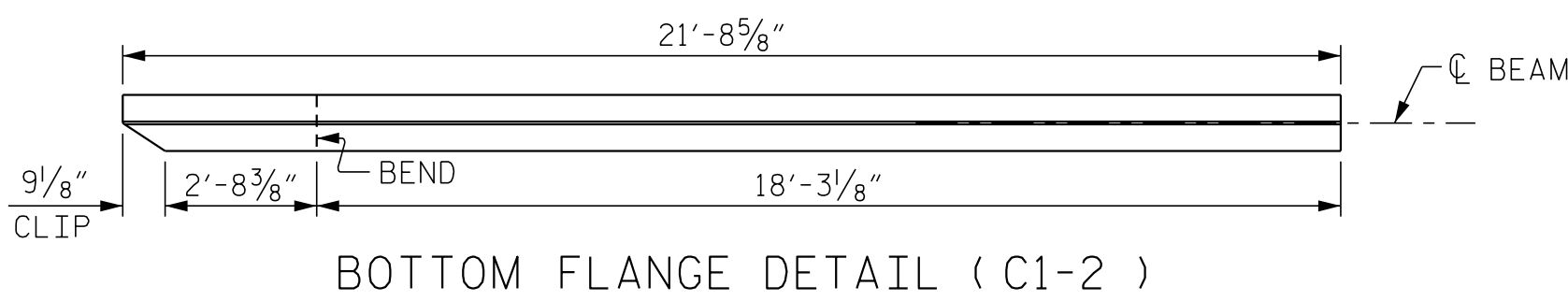
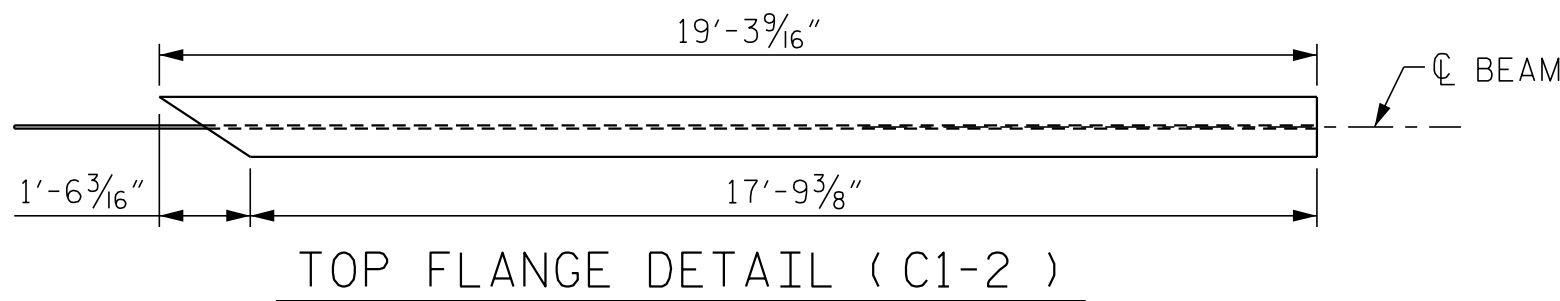
PA:2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_SS.dgn 4/26/2024 7:57:01 AM



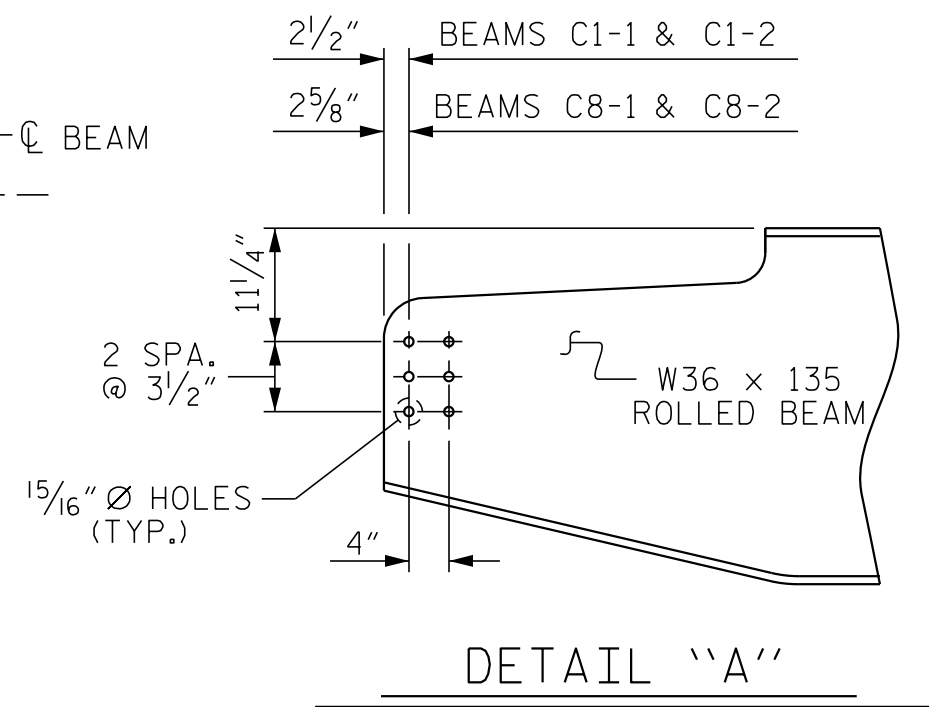
(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



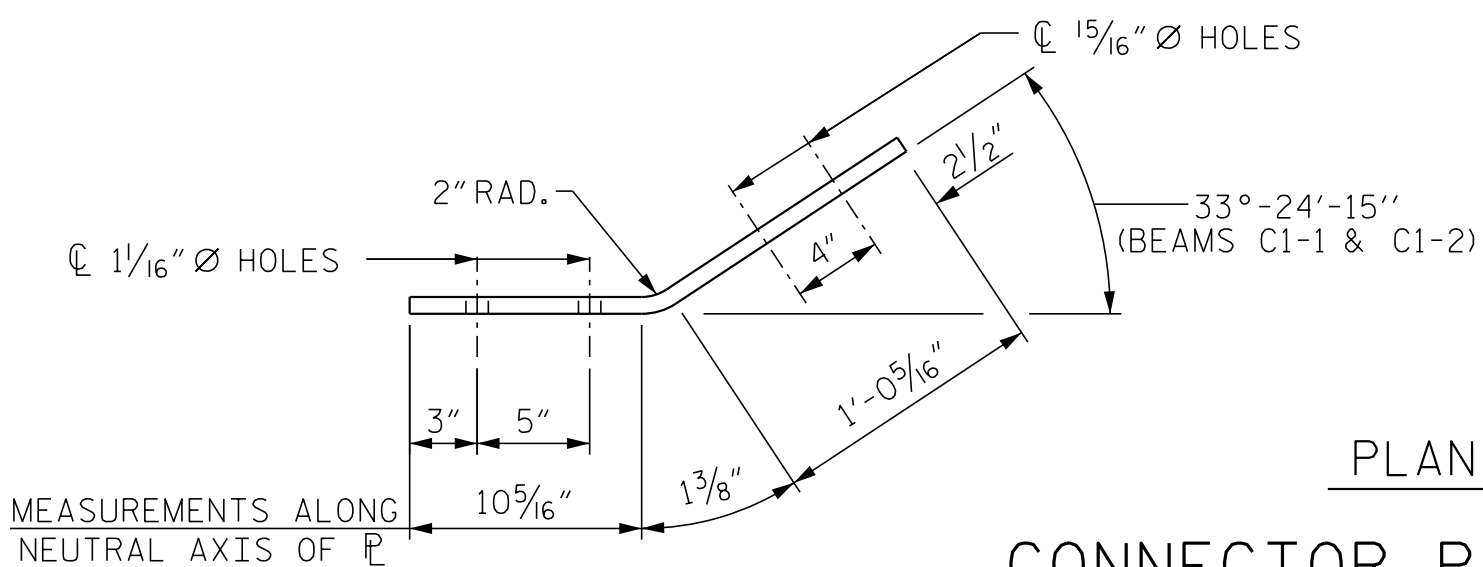
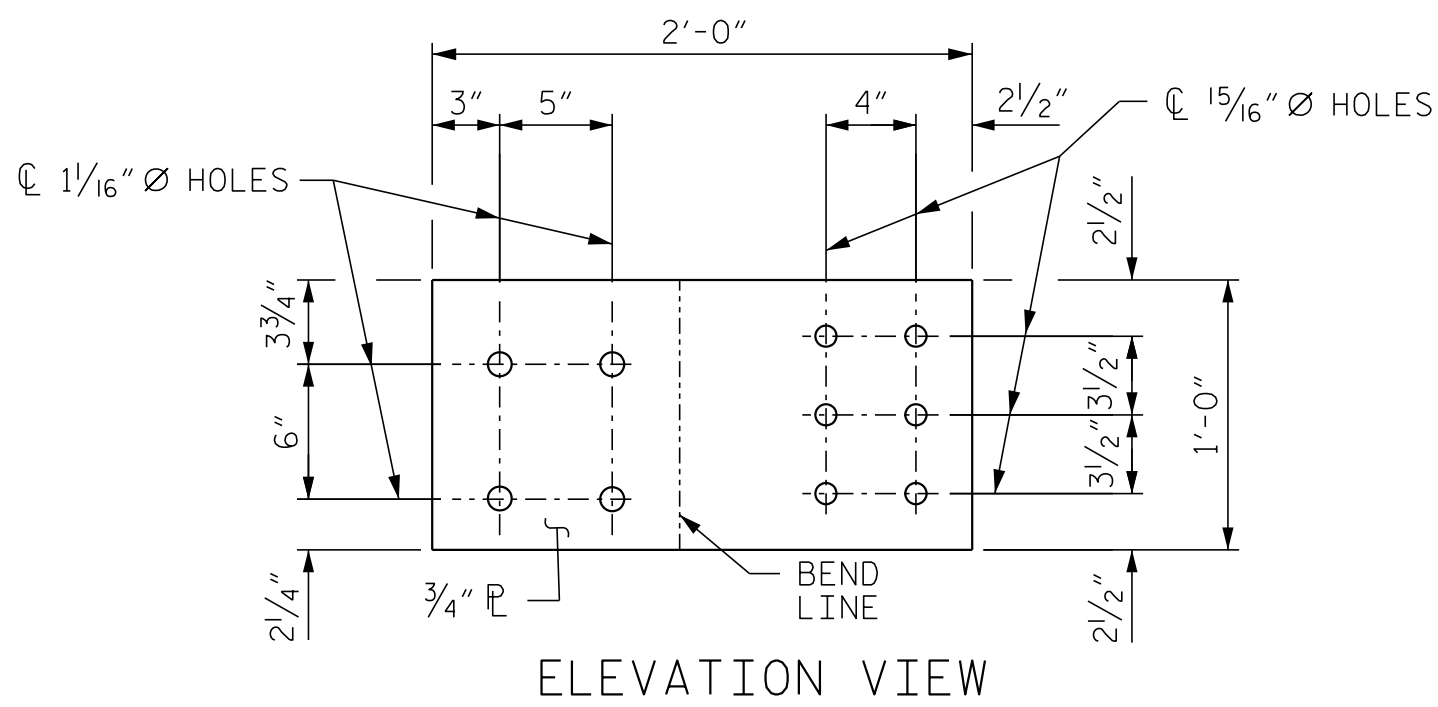
(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



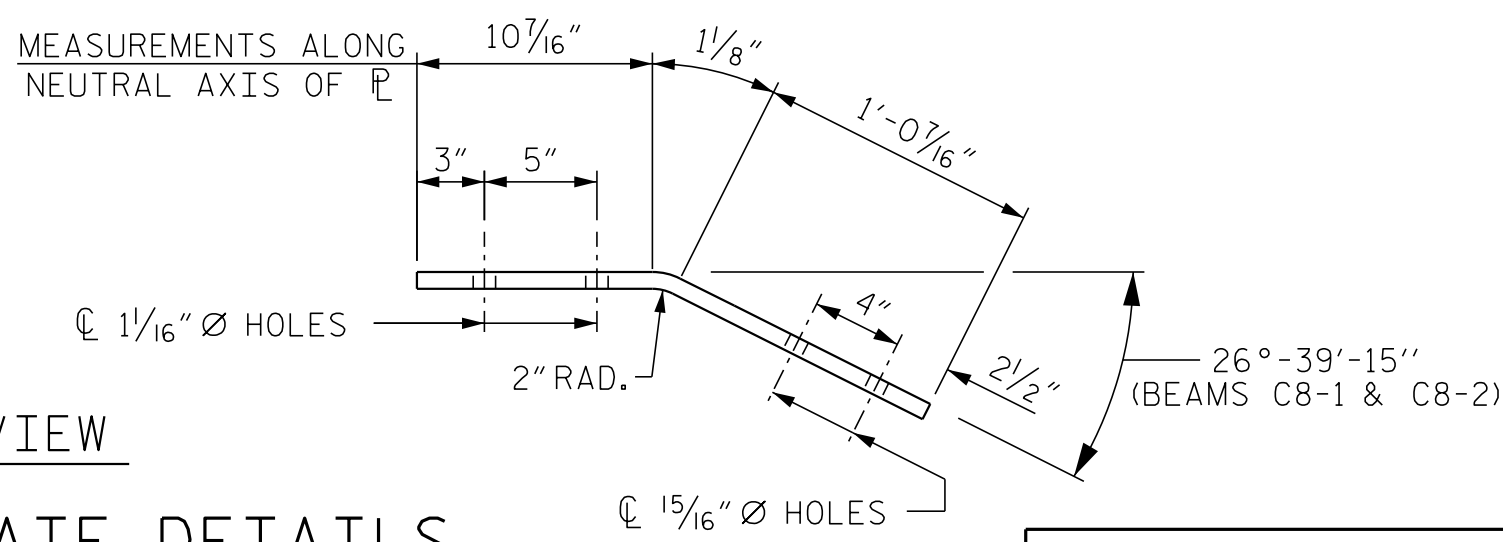
DRAWN BY: D. HODGE DATE: 8/22
CHECKED BY: J. DILWORTH DATE: 8/22



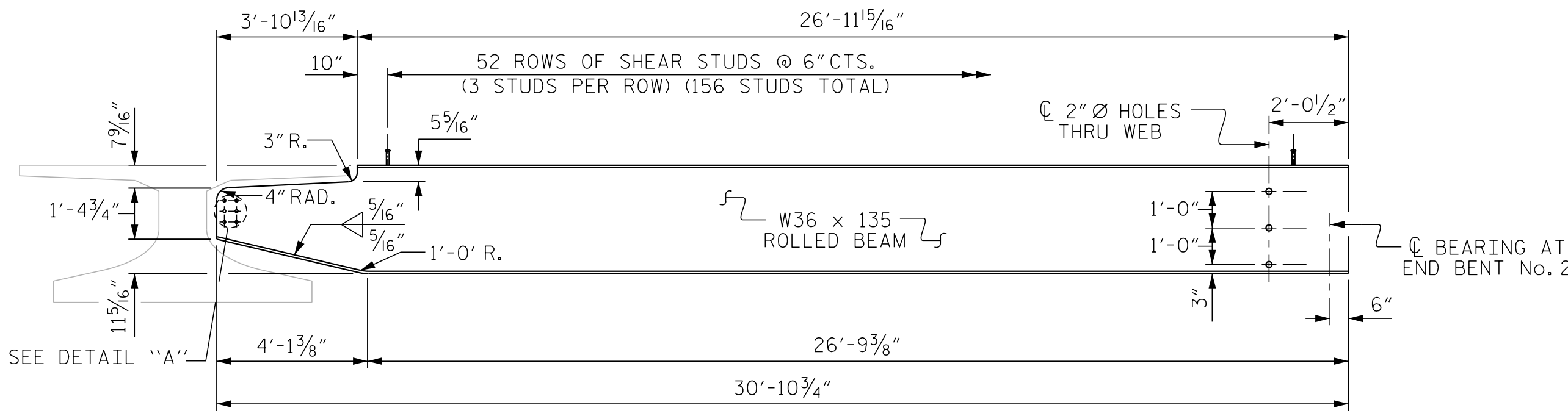
BEAM No.	TOTAL DL DEFLECTIONS AT MID-SPAN
C1-1	$\frac{3}{16}$ "
C1-2	< $\frac{1}{16}$ "
C8-1	$\frac{3}{16}$ "
C8-2	< $\frac{1}{16}$ "



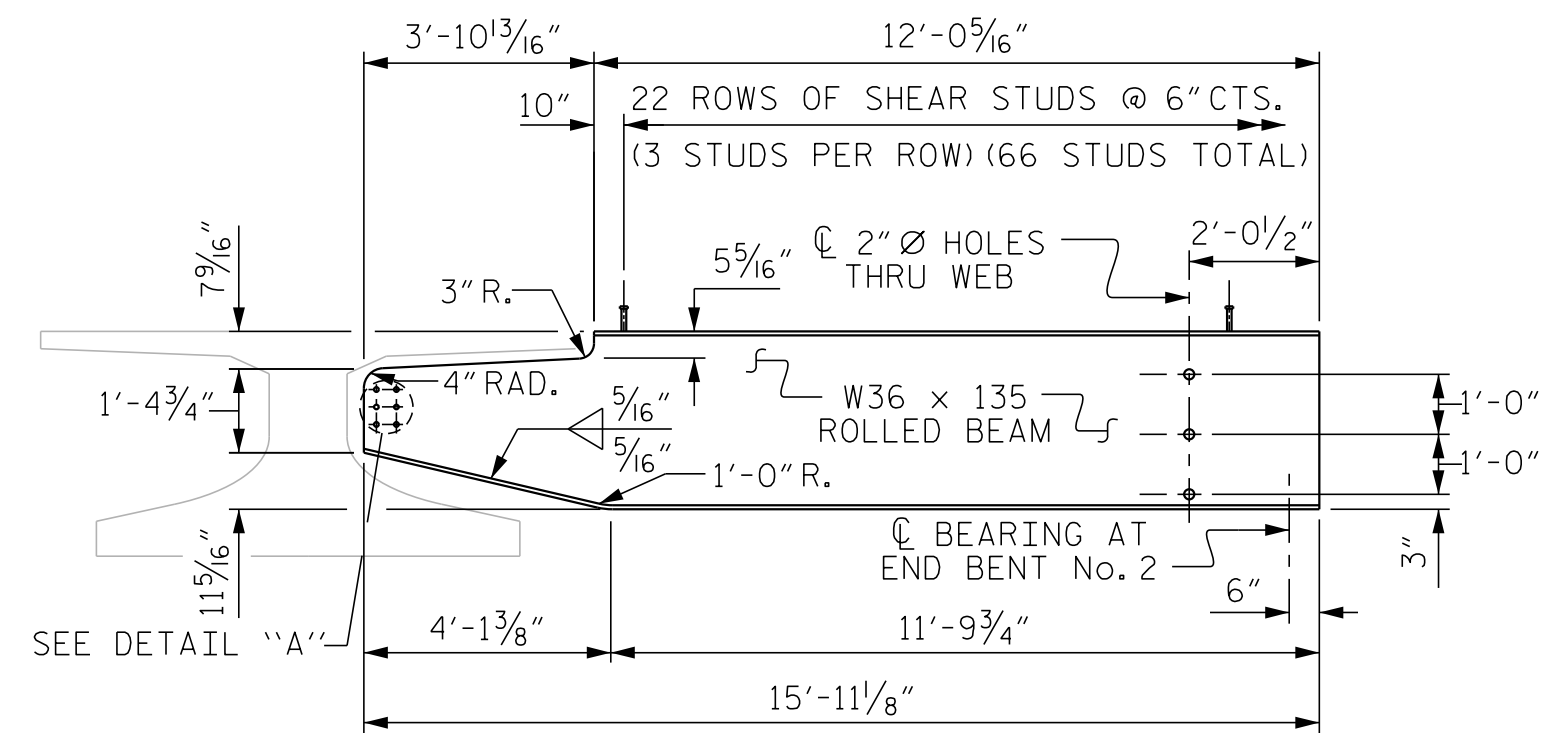
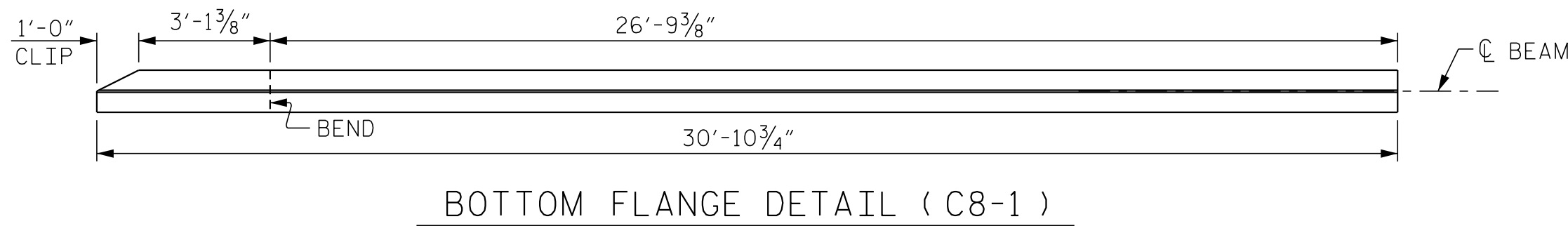
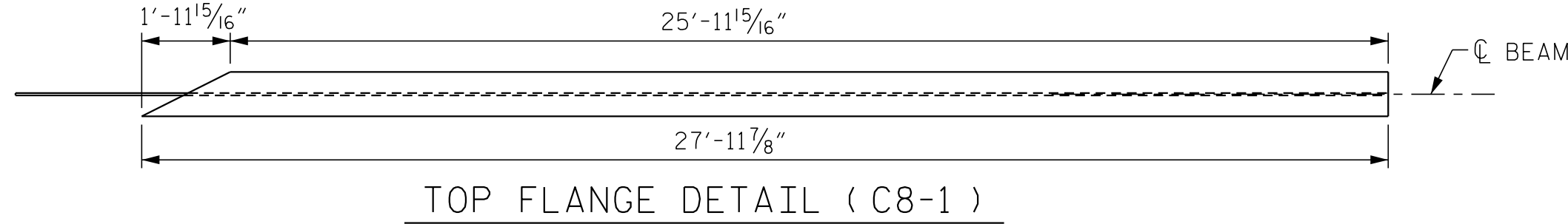
CONNECTOR PLATE DETAILS



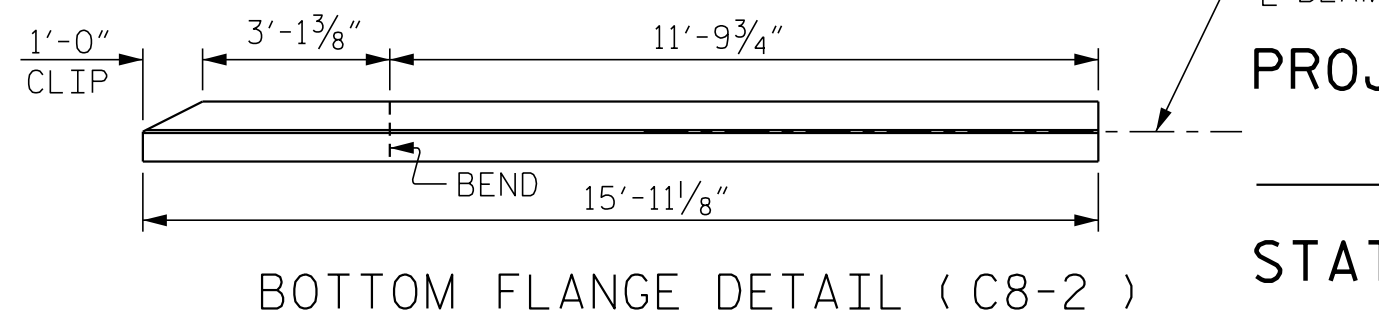
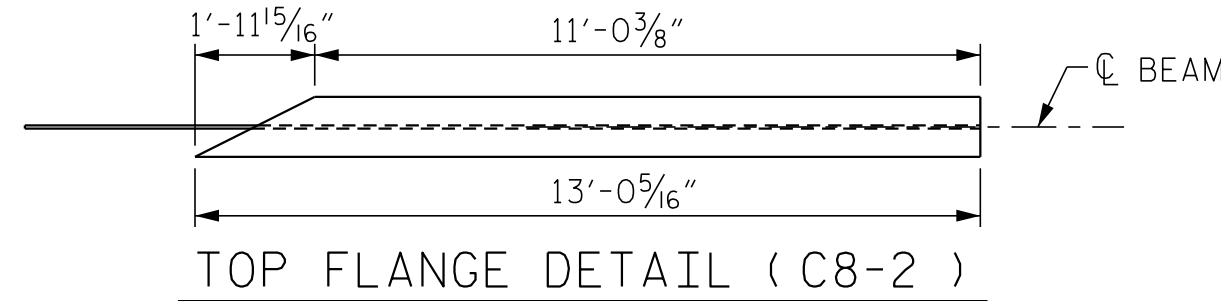
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)

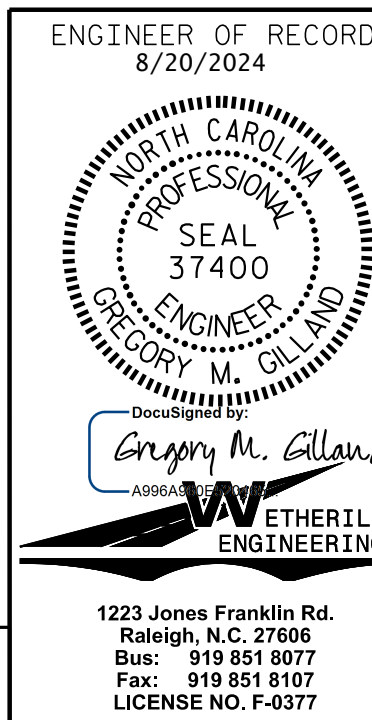


(DIMENSIONS ARE ALONG $\varnothing$ BEAM AND DO NOT ACCOUNT FOR EXTRA FLANGE LENGTH DUE TO ANGLE CUT AT BOLTED END OF BEAM)



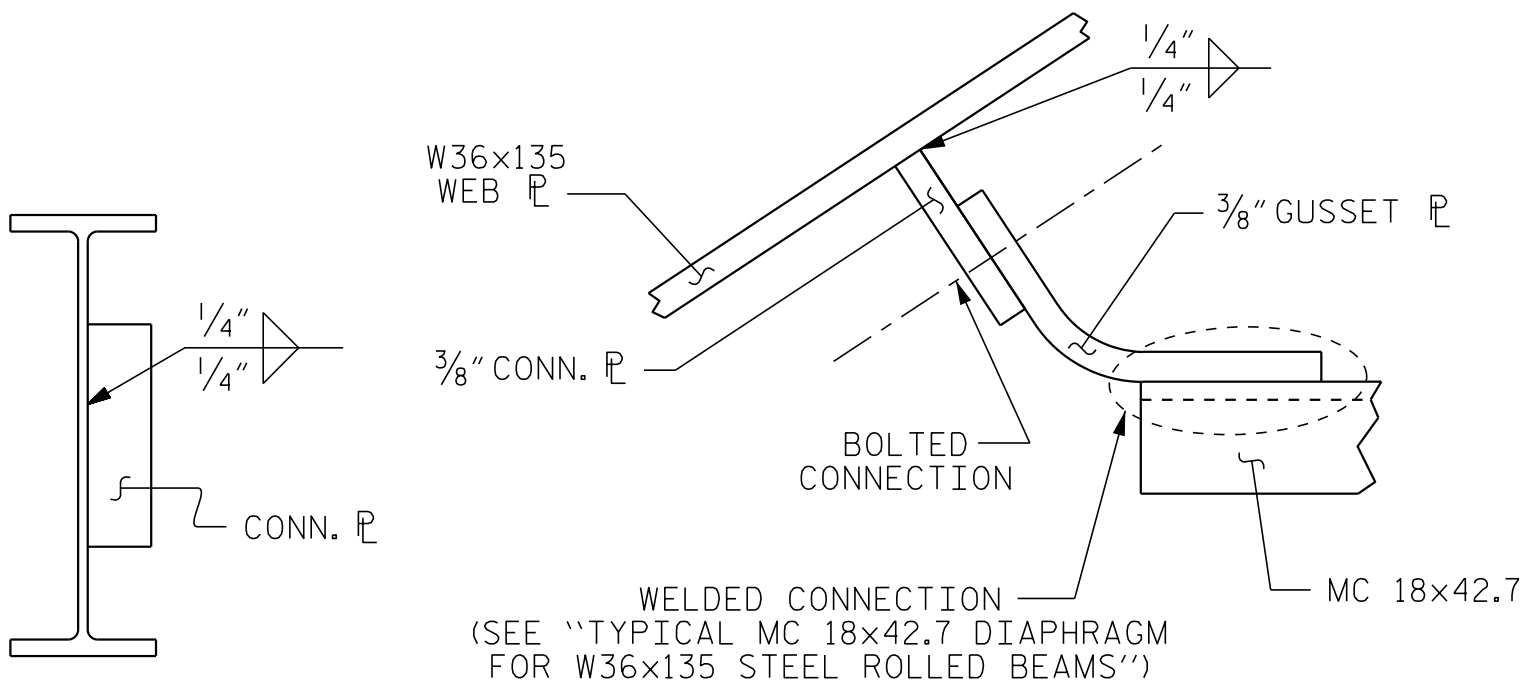
PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 1 OF 2

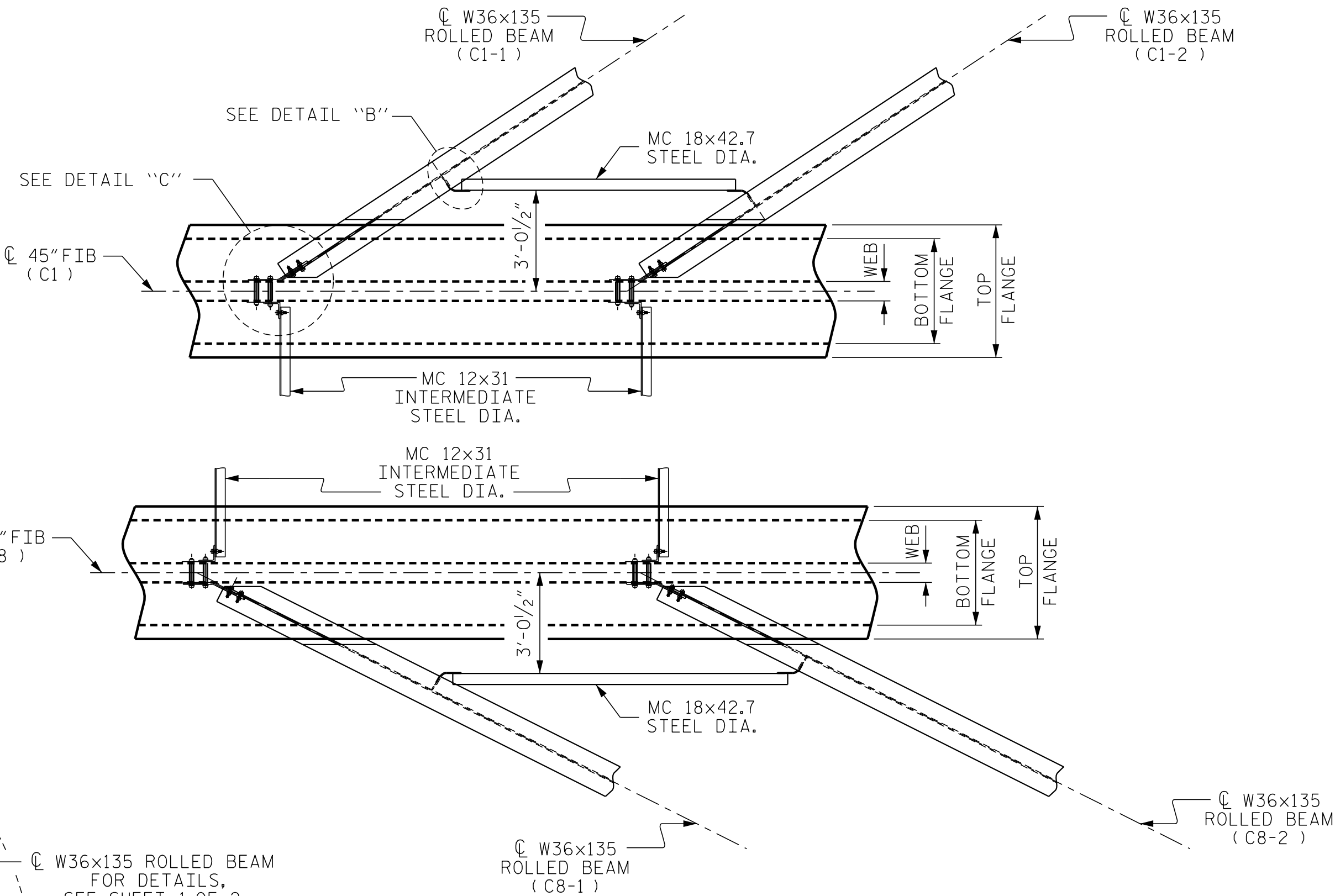


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-27
2			4			
TOTAL SHEETS						64

PA:2018\18156.01 B-5985 RobesonStructuresStr-2 (770175)NDGN402_001.B-5985-SITE 2 770175_SKU_SS.dgn 4/26/2024 7:57:30 AM

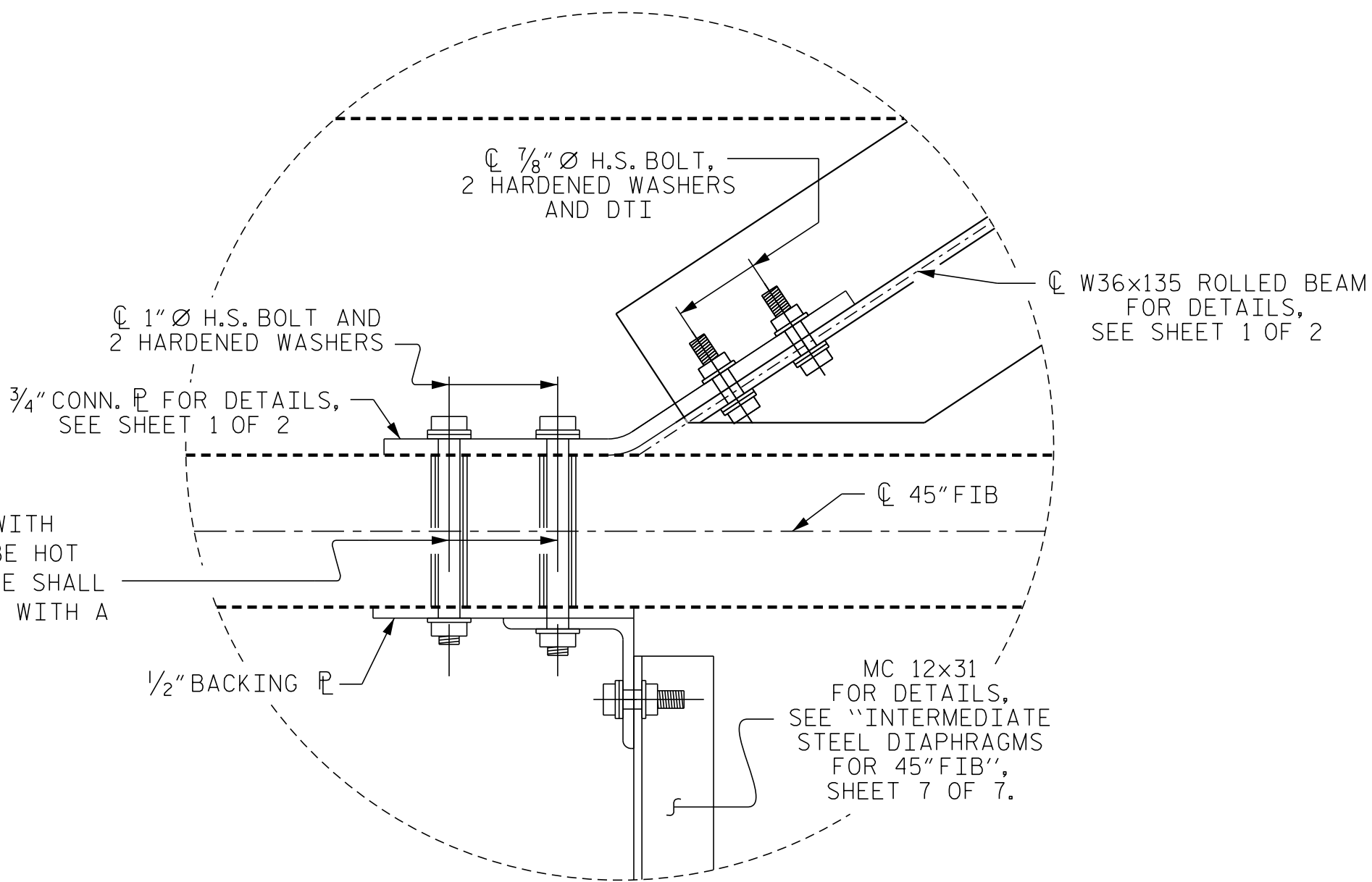


DETAIL "B"



PARTIAL FRAMING PLAN

1/4" DIAMETER HOLES SHALL BE FORMED WITH 1/4" SCH. 80 STEEL PIPE. PIPE SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. PIPE SHALL MEET THE REQUIREMENTS OF ASTM F1083 WITH A MINIMUM YIELD STRENGTH OF 30 KSI.



DETAIL "C"

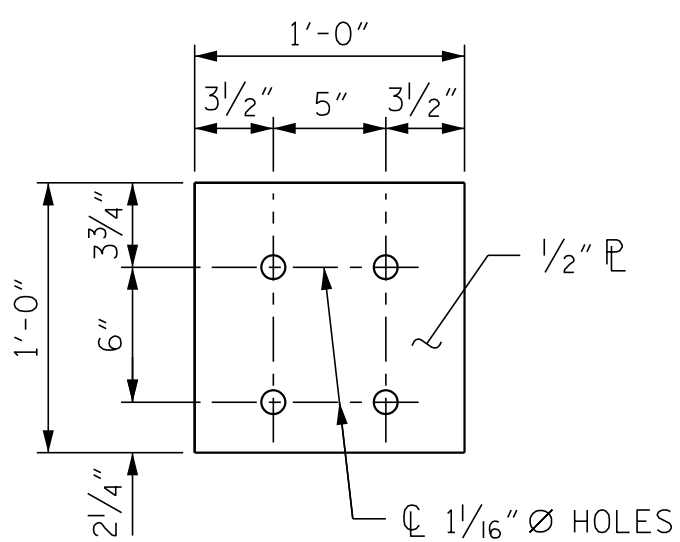
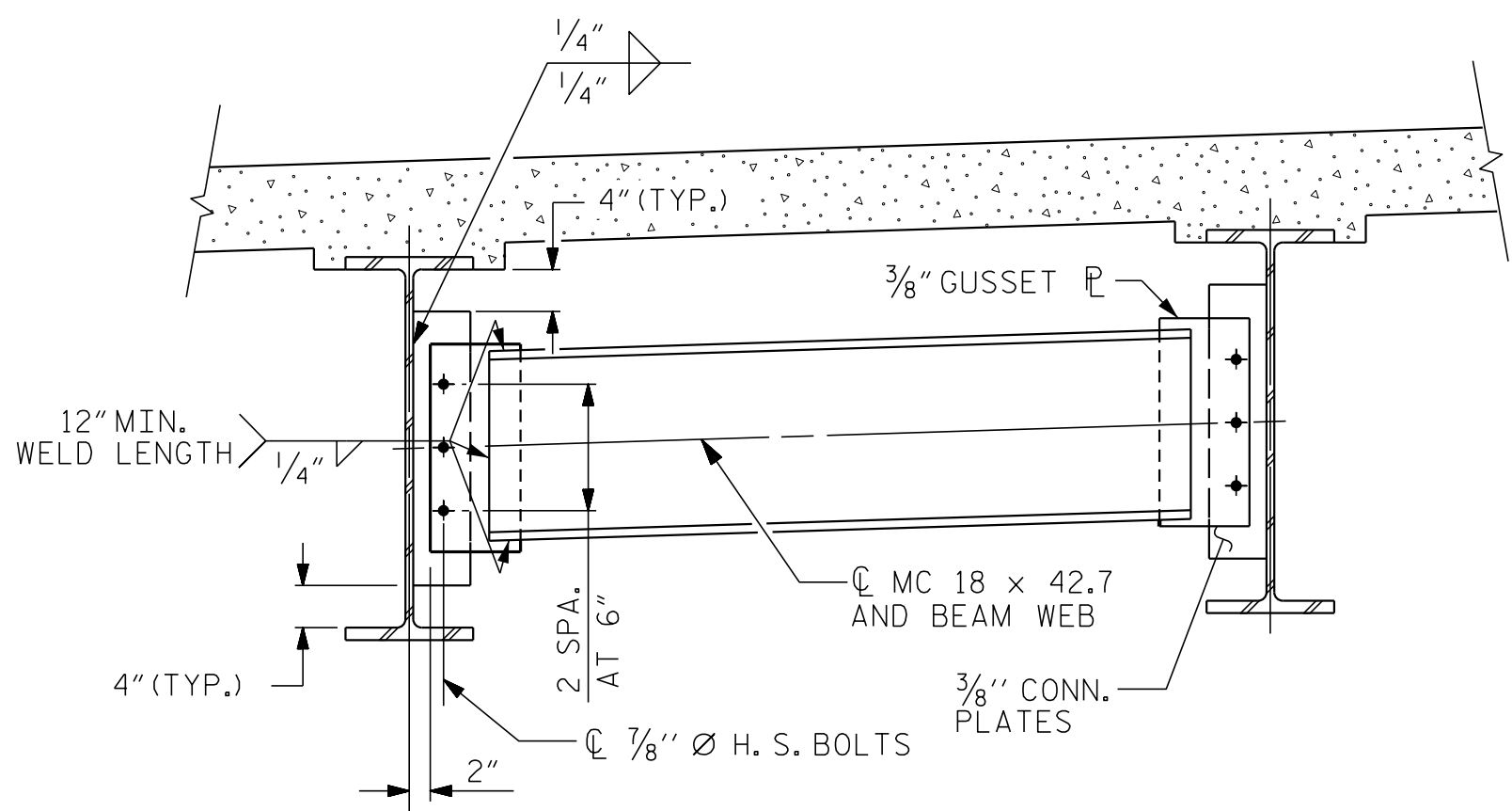
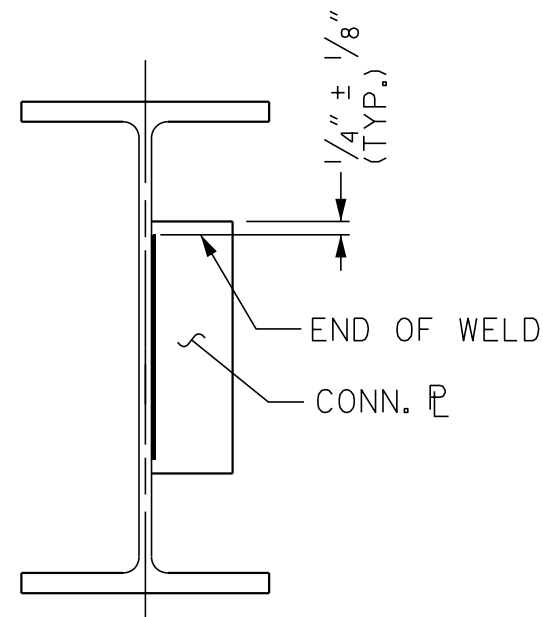


PLATE DETAIL

BACKING PLATE DETAIL



TYPICAL MC 18x42.7 DIAPHRAGM FOR W36x135 STEEL ROLLED BEAMS



ROLLED BEAM

TYPICAL CONNECTOR PLATE CONNECTION

WELD TERMINATION DETAIL

STRUCTURAL STEEL NOTES

ALL CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

ALL STEEL BEAMS AND STEEL DIAPHRAGM FOR STEEL BEAMS SHALL BE AASHTO GRADE 50W OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE STEEL BEAMS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OR THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES AND BENT PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE STRUCTURAL STEEL FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

CONNECTION BOLTS BETWEEN WEB OF STEEL BEAMS AND CONNECTOR PLATE, AND CONNECTOR PLATE AND DIAPHRAGM FOR STEEL BEAMS SHALL BE INSTALLED FINGER TIGHT. ONCE DECK POUR #1 IS COMPLETE AND PRIOR TO POUR #2, BACK 7/8" DIAMETER NUTS OFF ONE AT A TIME. APPLY SEVERAL DROPS OF LOCTITE 263, OR APPROVED EQUAL, TO BOLT THREADS AT THE NUT ENGAGEMENT AREA. RESNUG NUT FINGER TIGHT, REPEAT ON ALL BOLTS AT CONNECTION. ONCE ALL BOLTS HAVE THREAD LOCKING COMPOUND APPLIED, FULLY TIGHTEN BOLTS AS REQUIRED BY THE STANDARD SPECIFICATIONS. REPEAT FOR CONNECTION AT ADJACENT BEAM AND THEN MC 18x42.7 STEEL DIAPHRAGM.

CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR STEEL BEAMS TO BRACE AGAINST TORSION. BRACING SHALL BE INSTALLED PRIOR TO DECK POUR #2 AND SHALL REMAIN IN PLACE FOR 3 DAYS AFTER DECK POUR #3 IS COMPLETED.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

A CHARPY V-NOTCH TEST IS REQUIRED ON ALL BEAM SECTIONS AND CONNECTOR PLATES AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

NO SHOP CAMBER REQUIRED, TURN NATURAL MILL CAMBER UP.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD 8/20/2024 NORTH CAROLINA PROFESSIONAL SEAL 37400 REGISTERED PROFESSIONAL ENGINEER REC'D BY: M. GILLAND Drawn by: Gregory M. Gilland Approved: W. E. HERRILL ENGINEERING 1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE STRUCTURAL STEEL																			
REVISIONS <table><tr><th>NO.</th><th>BY:</th><th>DATE:</th><th>NO.</th><th>BY:</th><th>DATE:</th></tr><tr><td>1</td><td></td><td></td><td>3</td><td></td><td></td></tr><tr><td>2</td><td></td><td></td><td>4</td><td></td><td></td></tr></table>		NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4			SHEET NO. S-28 TOTAL SHEETS 64	
NO.	BY:	DATE:	NO.	BY:	DATE:																
1			3																		
2			4																		

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : J. DILWORTH DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPANS ``A'' & ``B''																					
	GIRDERS 1 & 2																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.022	0.045	0.068	0.089	0.107	0.123	0.136	0.145	0.151	0.152	0.151	0.145	0.136	0.123	0.107	0.089	0.068	0.045	0.022	0	
FINAL CAMBER ↑	0"	3⁄8"	11⁄16"	15⁄16"	11⁄8"	11⁄4"	13⁄8"	17⁄16"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	17⁄16"	13⁄8"	11⁄4"	11⁄8"	15⁄16"	11⁄16"	3⁄8"	0"	

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPANS ``A'' & ``B''																					
	GIRDERS 3, 7 & 8																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.019	0.039	0.058	0.076	0.092	0.106	0.116	0.124	0.129	0.131	0.129	0.124	0.116	0.106	0.092	0.076	0.058	0.039	0.019	0	
FINAL CAMBER ↑	0"	7⁄16"	13⁄16"	1 1⁄16"	1 5⁄16"	1 7⁄16"	1 9⁄16"	1 11⁄16"	1 3⁄4"	1 3⁄4"	1 3⁄4"	1 3⁄4"	1 3⁄4"	1 11⁄16"	1 9⁄16"	1 7⁄16"	1 5⁄16"	1 1⁄16"	1 3⁄16"	7⁄16"	0"	

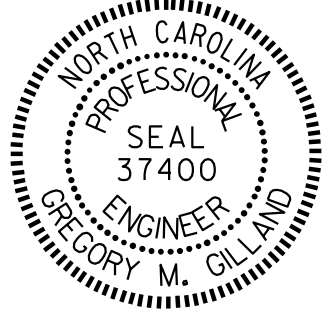
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6"Ø LOW RELAXATION	SPANS ``A'' & ``B''																					
	GIRDERS 4, 5 & 6																					
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00	
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.017	0.034	0.051	0.066	0.080	0.092	0.101	0.108	0.112	0.114	0.112	0.108	0.101	0.092	0.080	0.066	0.051	0.034	0.017	0	
FINAL CAMBER ↑	0"	7⁄16"	13⁄16"	1½"	1¾"	1⅝"	1¾"	1⅞"	1⅝"	2"	2"	2"	1⅝"	1⅞"	1¾"	1⅝"	1¾"	1⅝"	1⅞"	1½"	0"	

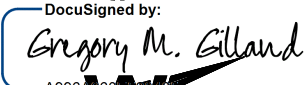
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ``FINAL CAMBER '', WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
8/20/2024



DocuSigned by:

GREGORY M. GILLAND

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DEAD LOAD
DEFLECTIONS
SPANS ``A'' & ``B''

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS 64
2			4			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : J. PENDERGRAFT DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE_2_770175_SKU_DL.dgn 4/26/2024 7:58:26 AM

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 1																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.083	0.158	0.225	0.283	0.332	0.371	0.402	0.423	0.436	0.440	0.436	0.423	0.402	0.371	0.332	0.283	0.225	0.158	0.083	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.042	0.086	0.130	0.172	0.209	0.242	0.270	0.292	0.307	0.315	0.315	0.308	0.293	0.270	0.238	0.198	0.152	0.101	0.049	0
FINAL CAMBER ↑	0"	1⁄2"	7⁄8"	1⁄8"	15⁄16"	1⁄2"	19⁄16"	19⁄16"	19⁄16"	19⁄16"	1⁄2"	17⁄16"	13⁄8"	15⁄16"	1⁄4"	1⁄8"	1"	7⁄8"	11⁄16"	3⁄8"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 8																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.083	0.158	0.225	0.283	0.332	0.371	0.402	0.423	0.436	0.44	0.436	0.423	0.402	0.371	0.332	0.283	0.225	0.158	0.083	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.035	0.072	0.109	0.144	0.175	0.203	0.226	0.244	0.257	0.264	0.264	0.258	0.245	0.226	0.200	0.167	0.128	0.086	0.042	0
FINAL CAMBER ↑	0"	9⁄16"	1⁄16"	13⁄8"	11⁄16"	17⁄8"	2"	2⁄8"	2⁄8"	2⁄8"	2⁄8"	2⁄16"	2"	17⁄8"	13⁄4"	19⁄16"	13⁄8"	13⁄16"	7⁄8"	1⁄2"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 2																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.020	0.042	0.063	0.083	0.100	0.115	0.126	0.135	0.141	0.142	0.140	0.135	0.126	0.115	0.100	0.083	0.063	0.042	0.020	0
FINAL CAMBER ↑	0"	7⁄16"	3⁄4"	1"	13⁄16"	13⁄8"	1⁄2"	19⁄16"	15⁄8"	15⁄8"	15⁄8"	15⁄8"	15⁄8"	19⁄16"	1⁄2"	13⁄8"	13⁄16"	1"	3⁄4"	7⁄16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDERS 3 & 7																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.019	0.039	0.058	0.077	0.093	0.106	0.117	0.125	0.130	0.131	0.130	0.125	0.116	0.105	0.092	0.076	0.058	0.039	0.019	0
FINAL CAMBER ↑	0"	7⁄16"	13⁄16"	1⁄16"	1⁄4"	17⁄16"	19⁄16"	11⁄16"	13⁄4"	13⁄4"	13⁄4"	13⁄4"	13⁄4"	11⁄16"	19⁄16"	17⁄16"	15⁄16"	1⁄16"	13⁄16"	7⁄16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDERS 4 & 5																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.016	0.034	0.051	0.067	0.081	0.093	0.102	0.109	0.113	0.115	0.114	0.109	0.102	0.093	0.081	0.067	0.051	0.034	0.017	0
FINAL CAMBER ↑	0"	1⁄2"	7⁄8"	1⁄8"	13⁄8"	19⁄16"	13⁄4"	17⁄8"	115⁄16"	115⁄16"	2"	115⁄16"	115⁄16"	17⁄8"	13⁄4"	19⁄16"	13⁄8"	1⁄8"	7⁄8"	7⁄16"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																					
0.6"Ø LOW RELAXATION	SPAN ``C``																				
	GIRDER 6																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.056	0.104	0.147	0.183	0.214	0.238	0.256	0.269	0.276	0.279	0.276	0.269	0.256	0.238	0.214	0.183	0.147	0.104	0.056	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.018	0.037	0.056	0.073	0.088	0.101	0.111	0.119	0.123	0.125	0.123	0.119	0.111	0.100	0.088	0.072	0.055	0.037	0.018	0
FINAL CAMBER ↑	0"	7⁄16"	13⁄16"	1⁄8"	15⁄16"	1⁄2"	15⁄8"	13⁄4"	113⁄16"	113⁄16"	17⁄8"	113⁄16"	113⁄16"	13⁄4"	15⁄8"	1⁄2"	15⁄16"	1⁄8"	13⁄16"	7⁄16"	0"

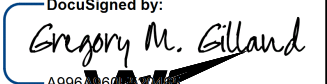
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT `` FINAL CAMBER `` , WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
8/20/2024



Designed by:

AND
 ETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

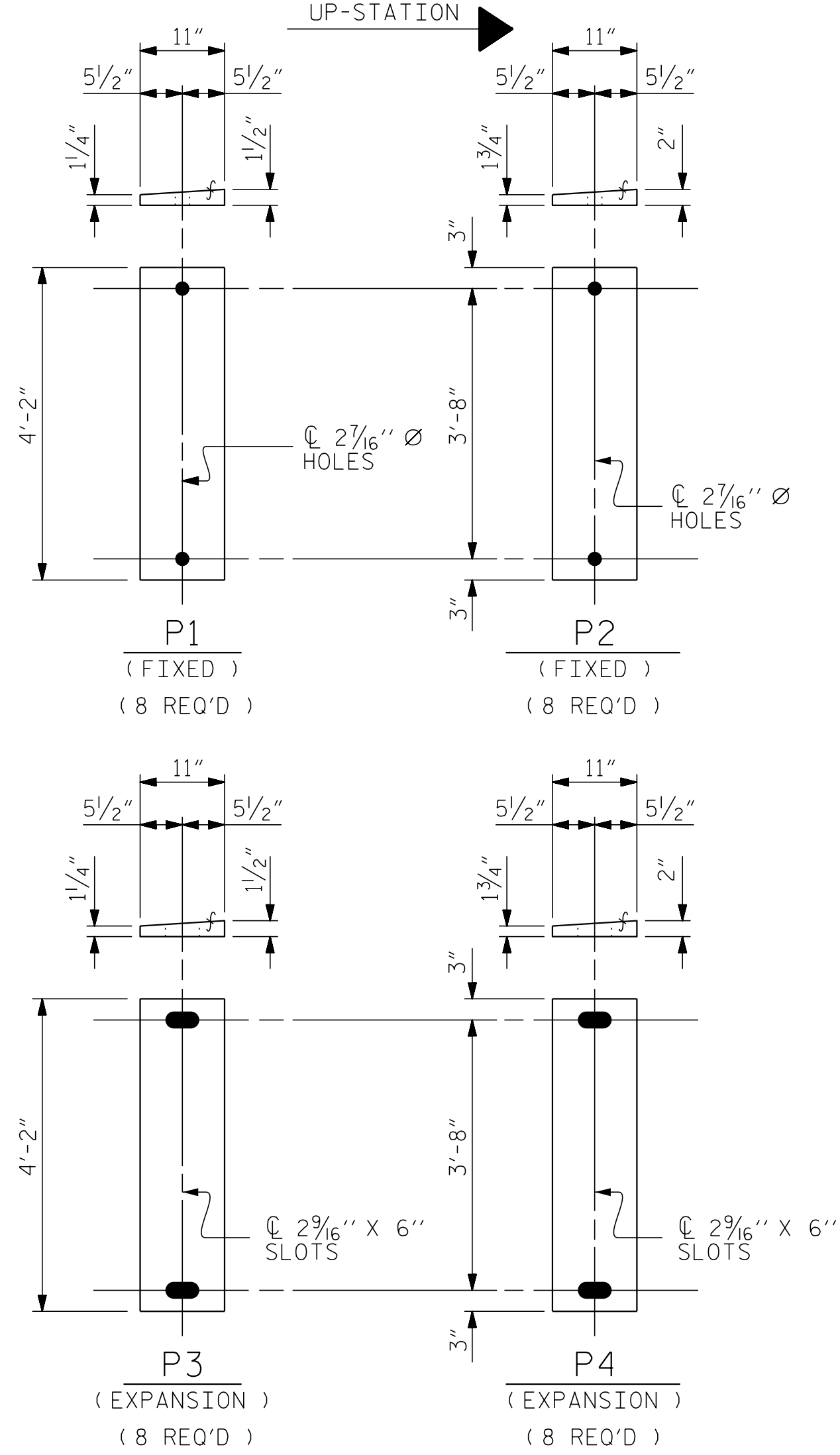
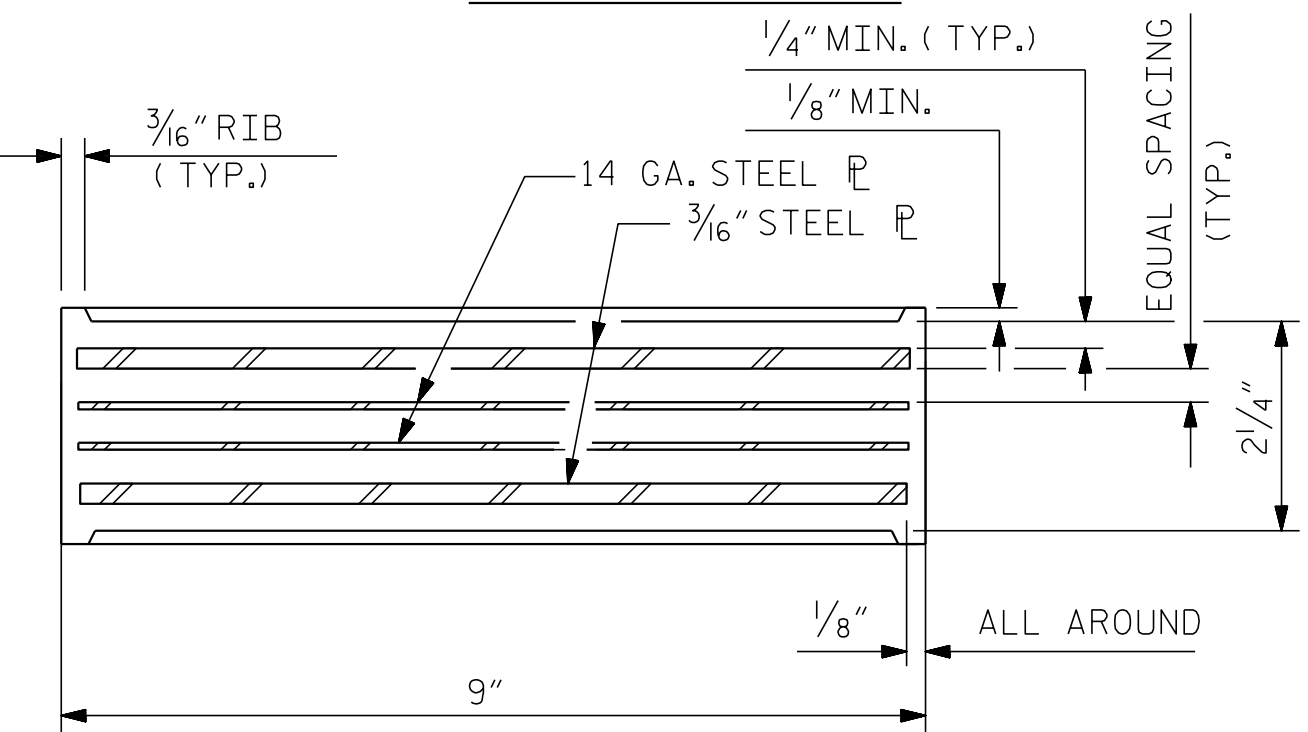
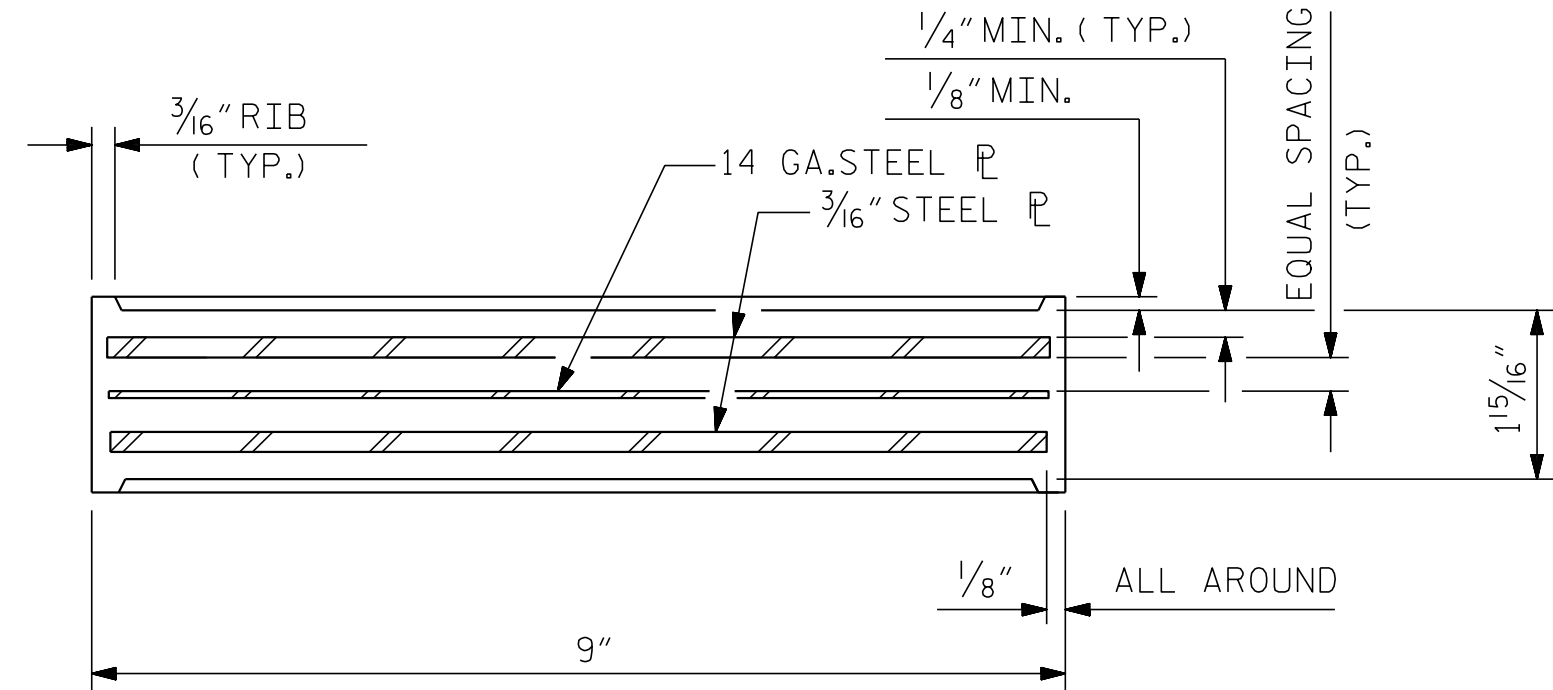
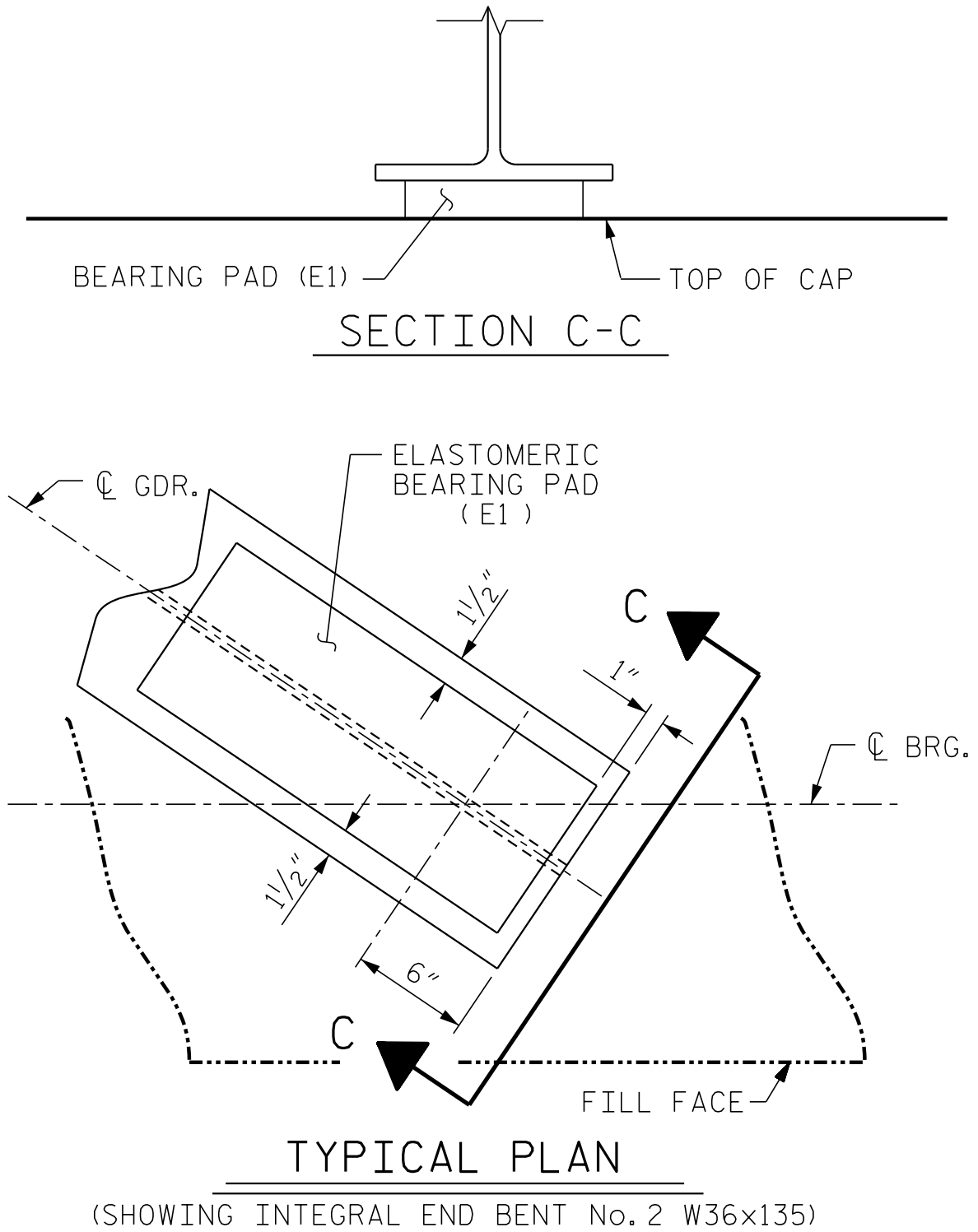
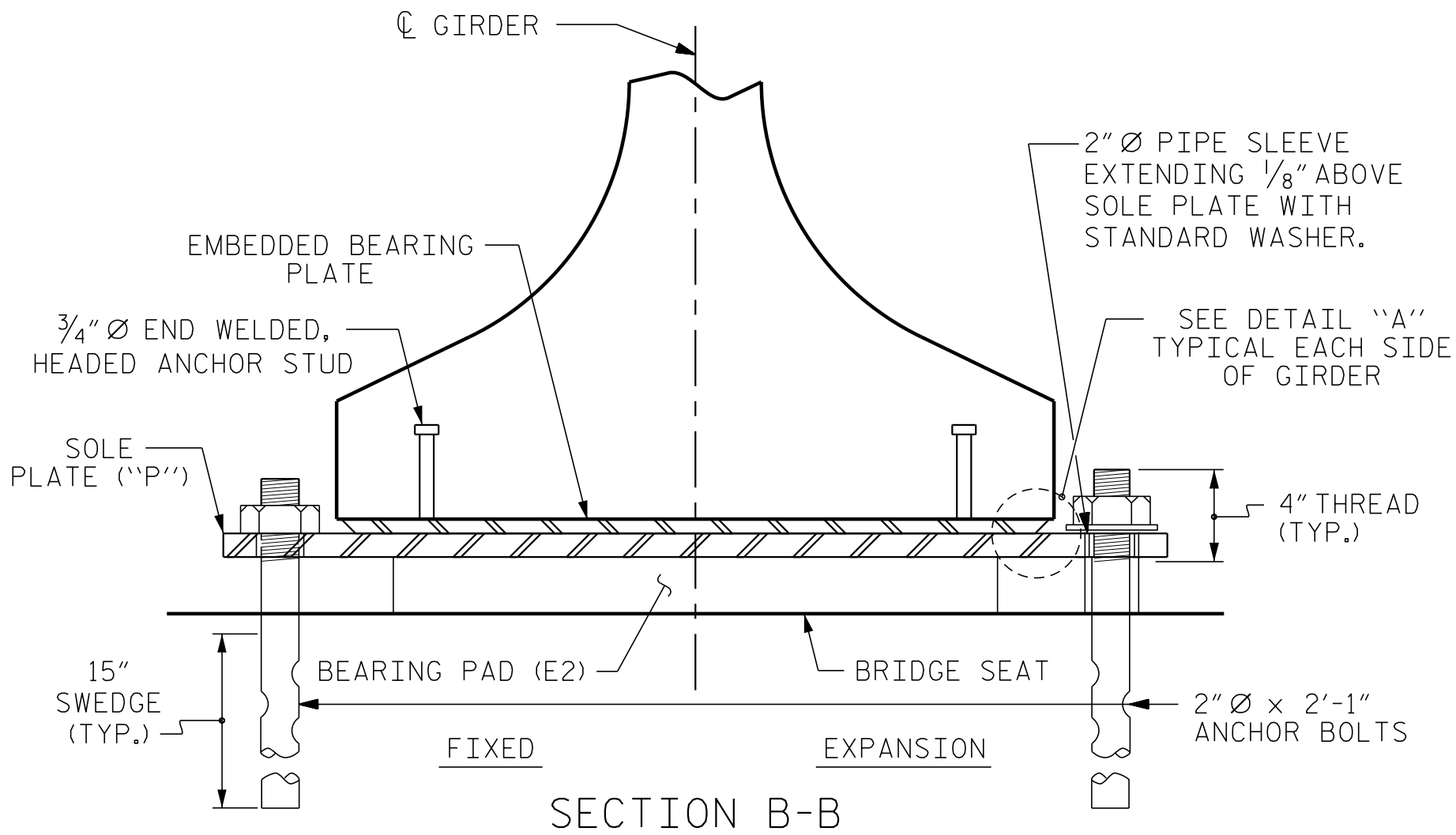
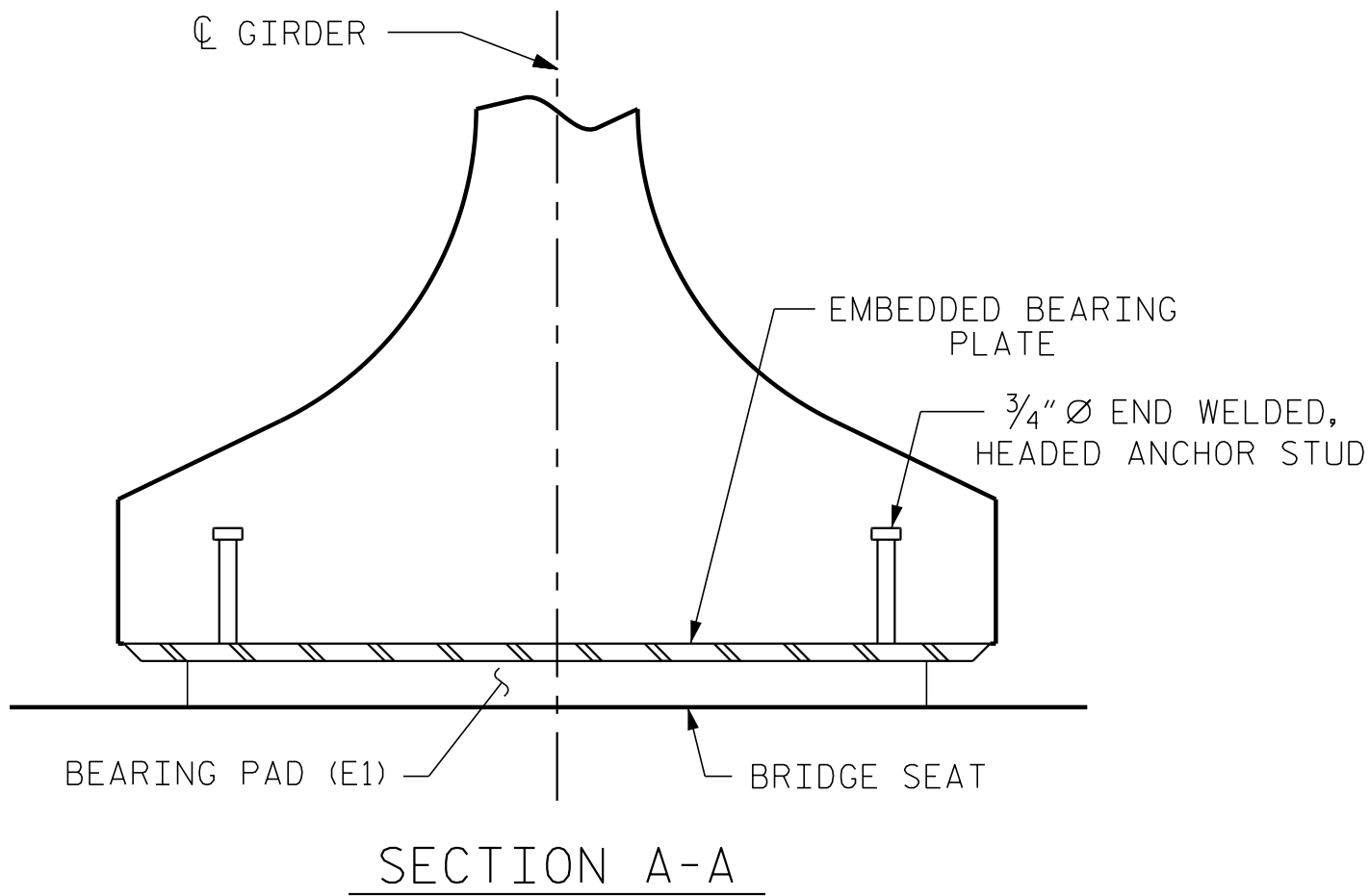
SUPERSTRUCTURE
DEAD LOAD
DEFLECTIONS
SPAN ``C``

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-30 TOTAL SHEETS 64
2			4			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : J. PENDERGRAFT DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

P:\2018\18156.01 B-5985 RobesonStructures\Str.-2 (770175)NDGN\402-001_B-5985-SITE 2 770175_SKU_DL.dgn 4/26/2024 7:59:07 AM



NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURR WITH A SHARP POINTED TOOL.

THE 2"Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

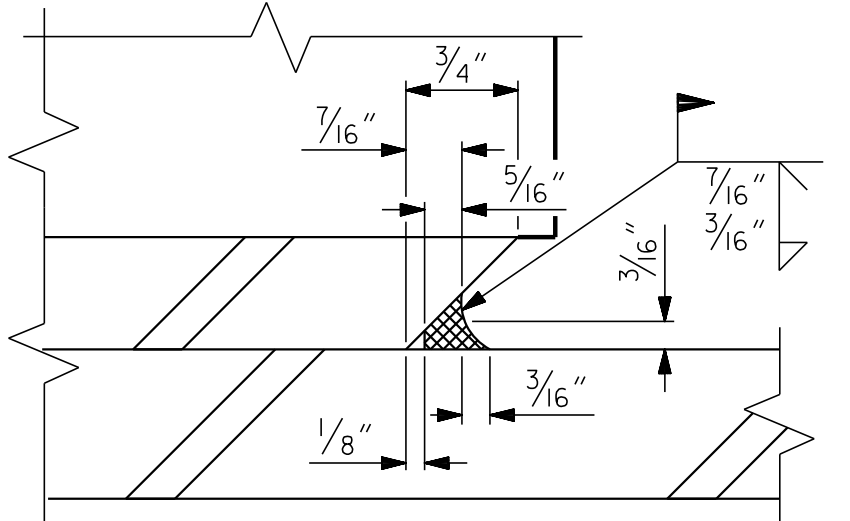
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



DETAIL "A"

MAXIMUM ALLOWABLE SERVICE LOADS

D.L.+L.L. (NO IMPACT)

TYPE IV 225 k

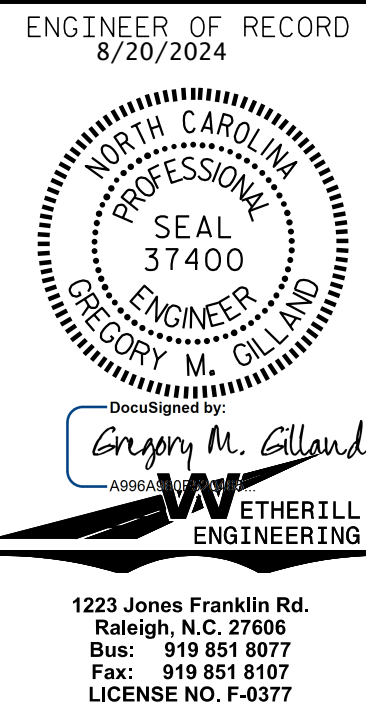
TYPE V 365 k

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BEARING PADS
AND SOLE PLATES
PRESTRESSED FLORIDA-I BEAM
AND W36 x 135

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-31	
				TOTAL SHEETS 64	

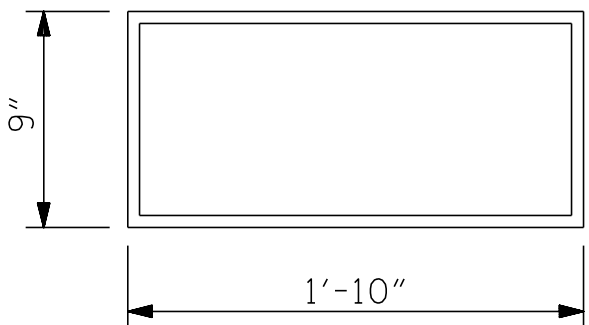


1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TYPICAL SECTION OF ELASTOMERIC BEARINGS

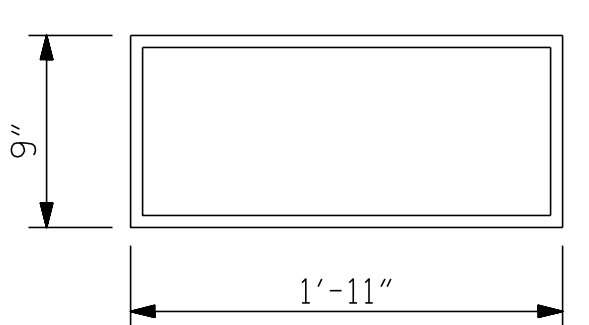
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (20 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

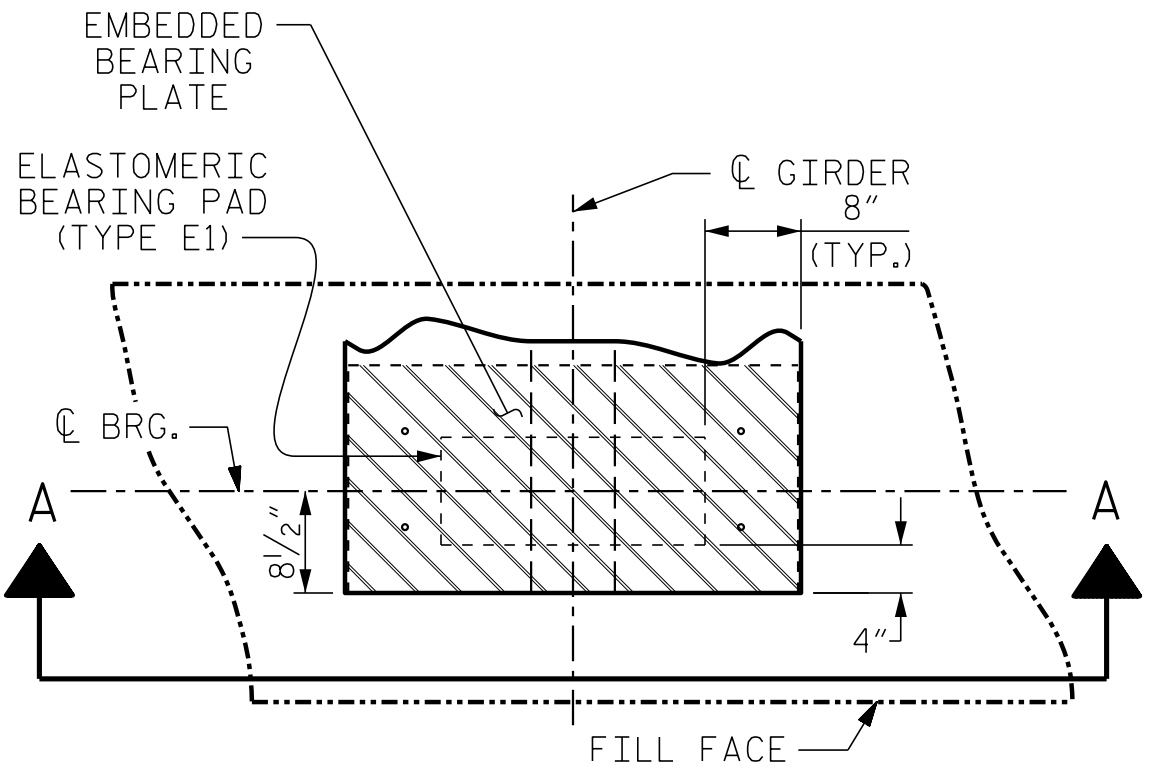
TYPE IV



E2 (32 REQ'D)

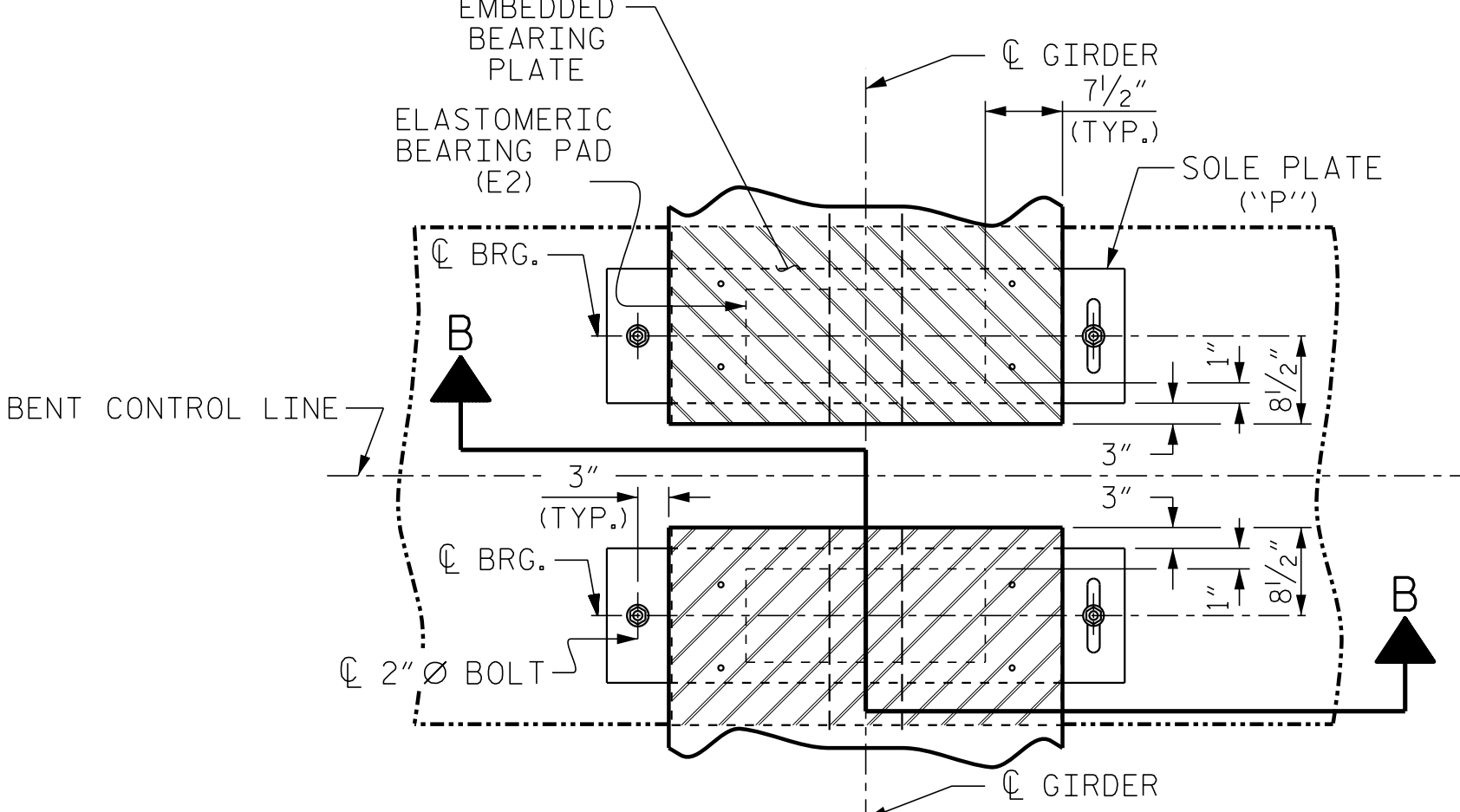
PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



TYPICAL PLAN

(SHOWING INTEGRAL END BENT @ 45° FIB)



TYPICAL HALF-PLAN

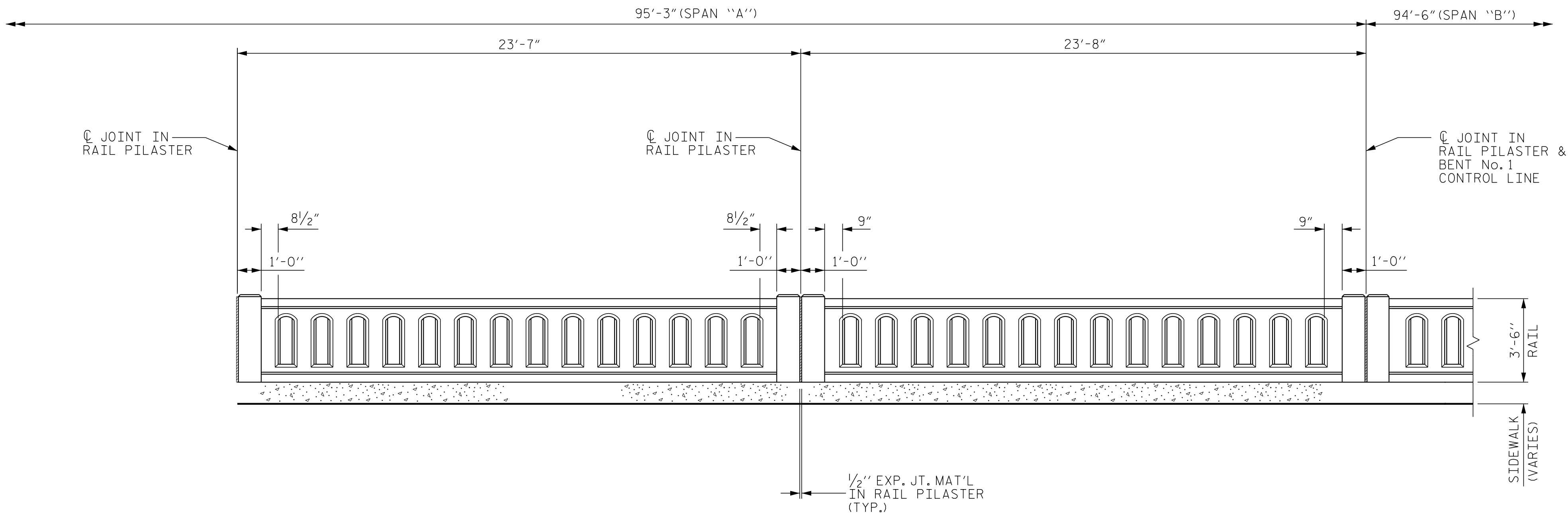
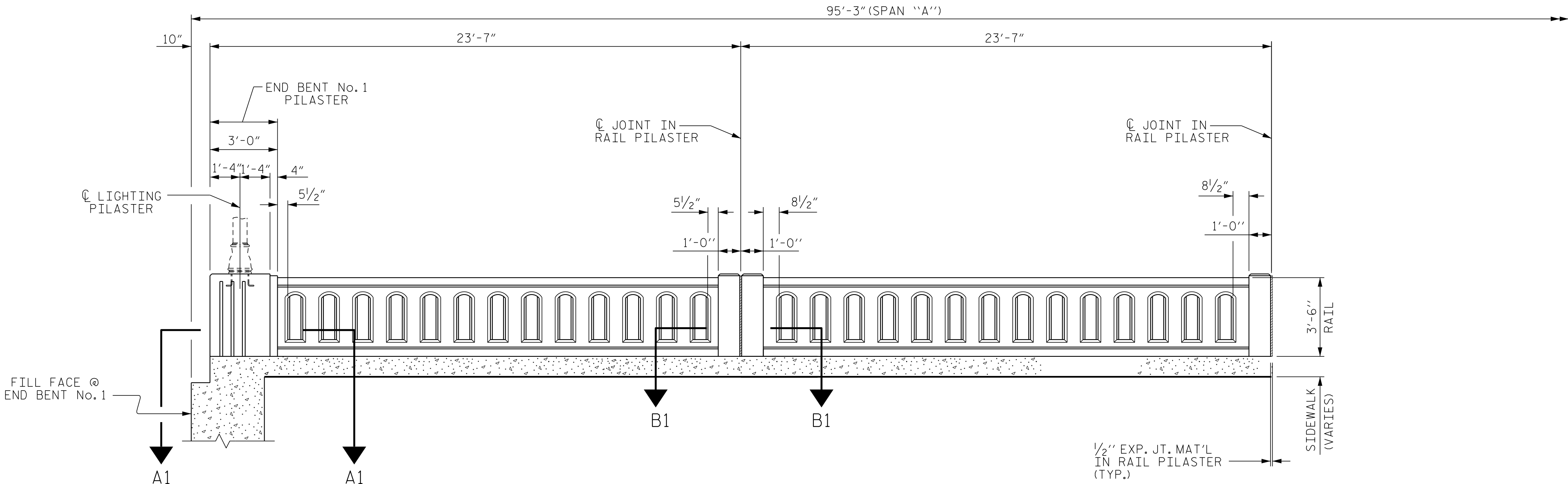
(SHOWING LINK SLAB BENT)

TYPICAL HALF-PLAN

(SHOWING SIMPLE SPAN BENT)

DRAWN BY : D. HODGE DATE : 8/22
CHECKED BY : J. DILWORTH DATE : 8/22

PA\2018\18156.01 B-5985 RobesonStructuresStr-2 (770175)NODM402_001.B-5985-SITE 2 770175_SKU_CRAIL.dgn 4/26/2024 8:05:57 AM



ROADWAY ELEVATION OF RAIL - SPAN "A"

(LEFT SIDE RAIL SHOWN, RIGHT SIDE RAIL SIMILAR)

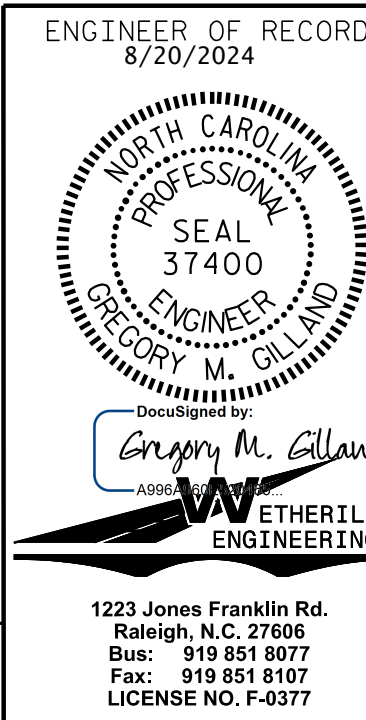
(FOR SECTIONS, SEE SHEET 5 OF 12)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 1 OF 12



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
ELEVATION - PLAN A

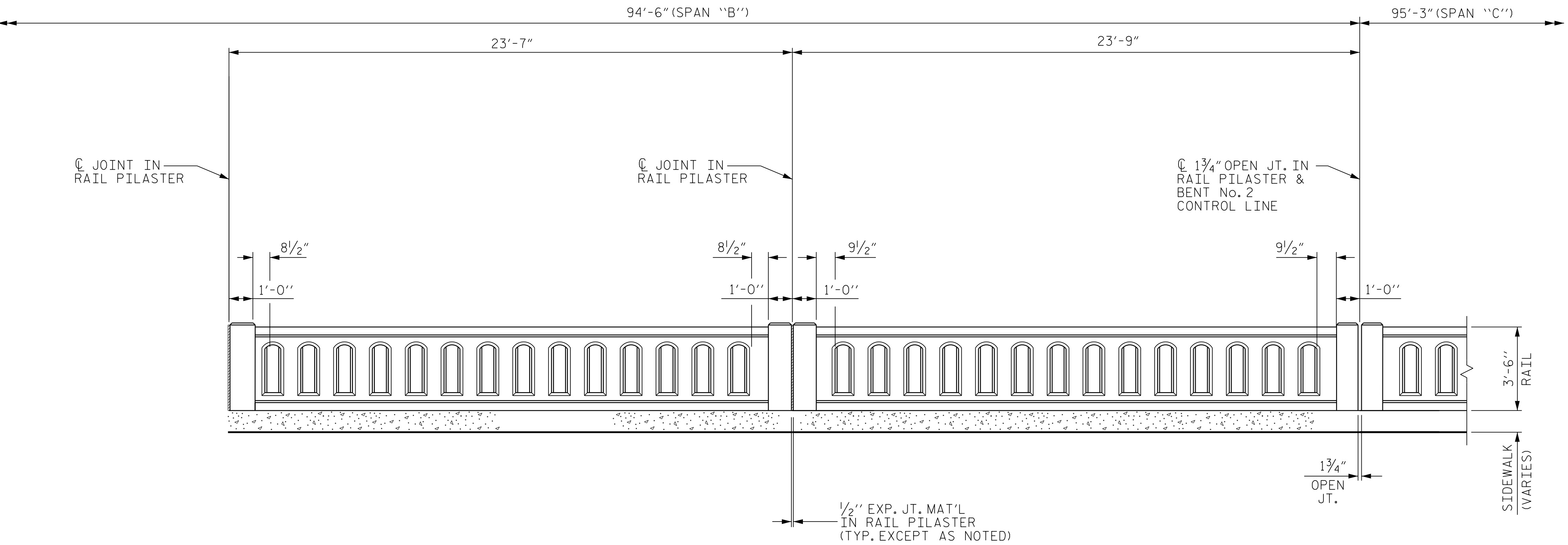
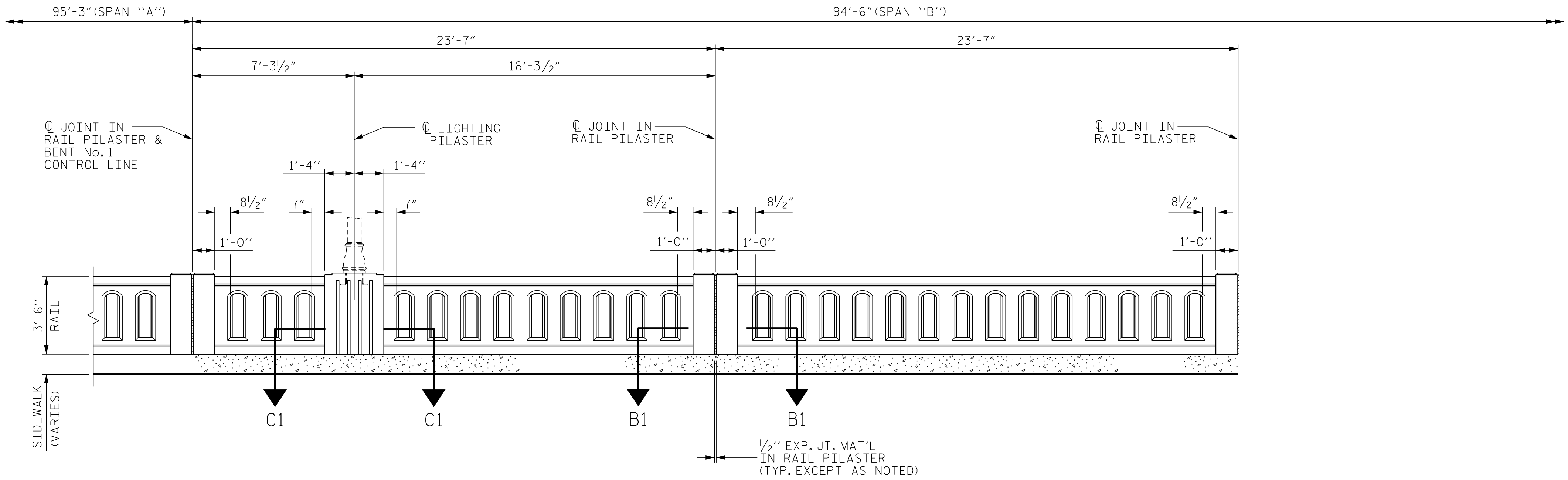
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-32
2			4			TOTAL SHEETS 64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 7/22
CHECKED BY : G. GILLAND DATE : 8/22

P:\2018\18156.01_B-5985_RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_CRAIL.dgn 12/19/2024 8:09:01 AM



ROADWAY ELEVATION OF RAIL - SPAN "B"

(LEFT SIDE RAIL SHOWN, RIGHT SIDE RAIL SIMILAR)

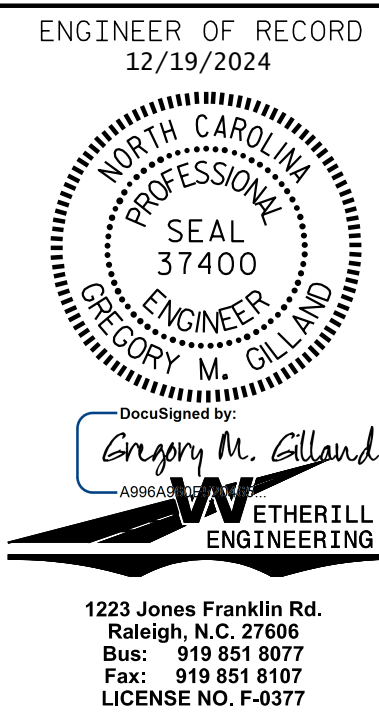
(FOR SECTIONS, SEE SHEET 5 OF 12)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 2 OF 12

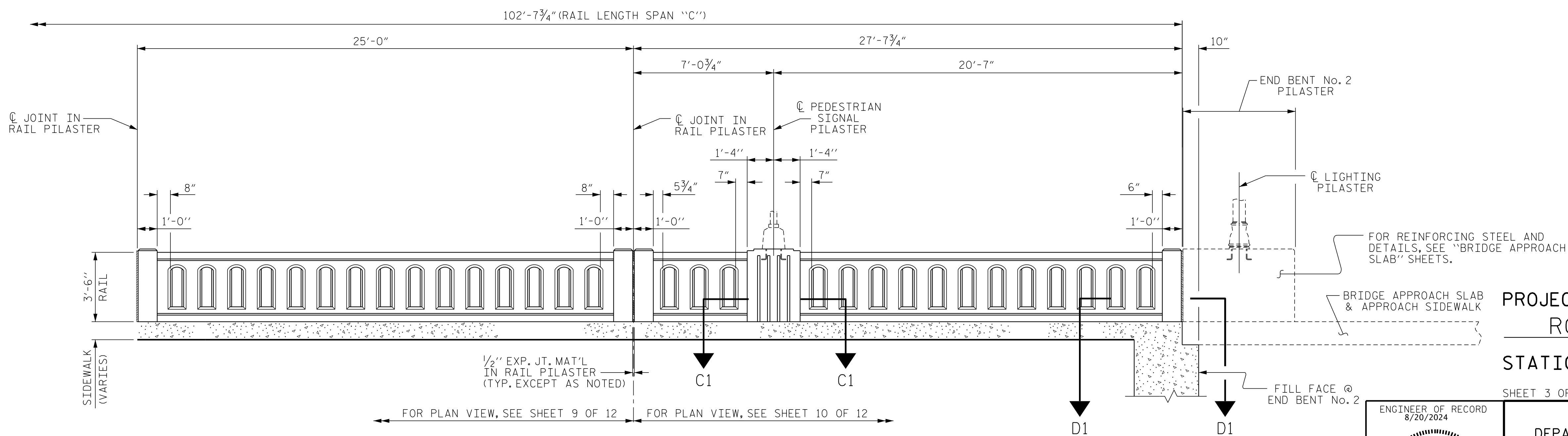


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
ELEVATION - PLAN B

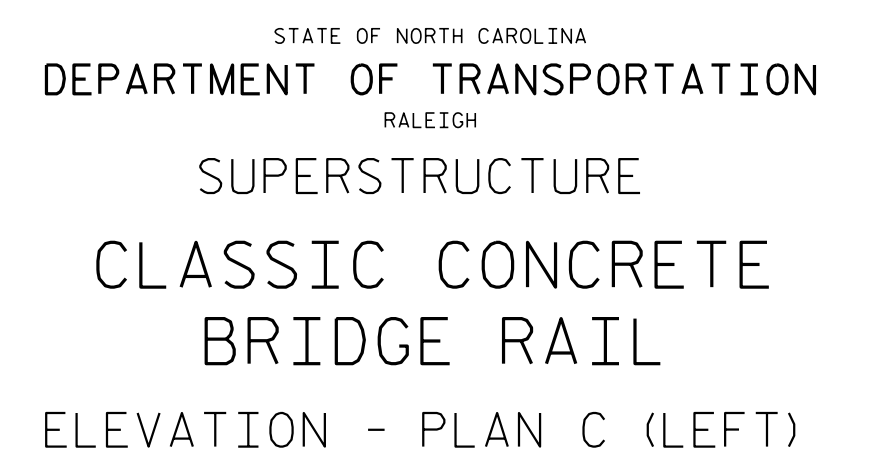
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-33 TOTAL SHEETS 64
2			4			

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 7/22
CHECKED BY : G. GILLAND DATE : 8/22

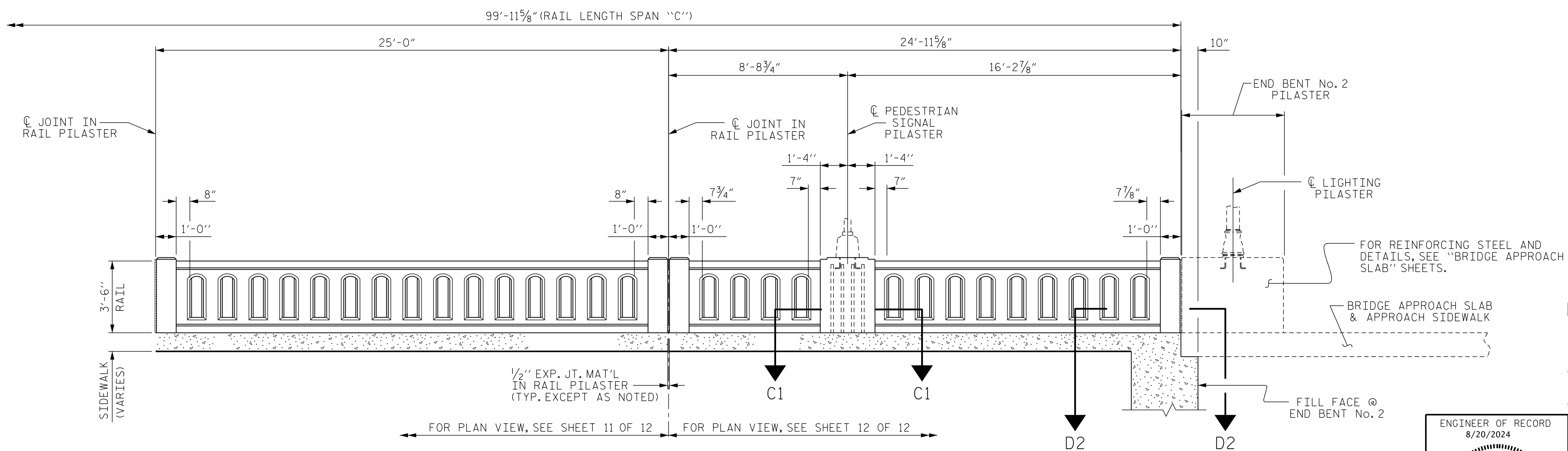


SHEET 3 OF 12

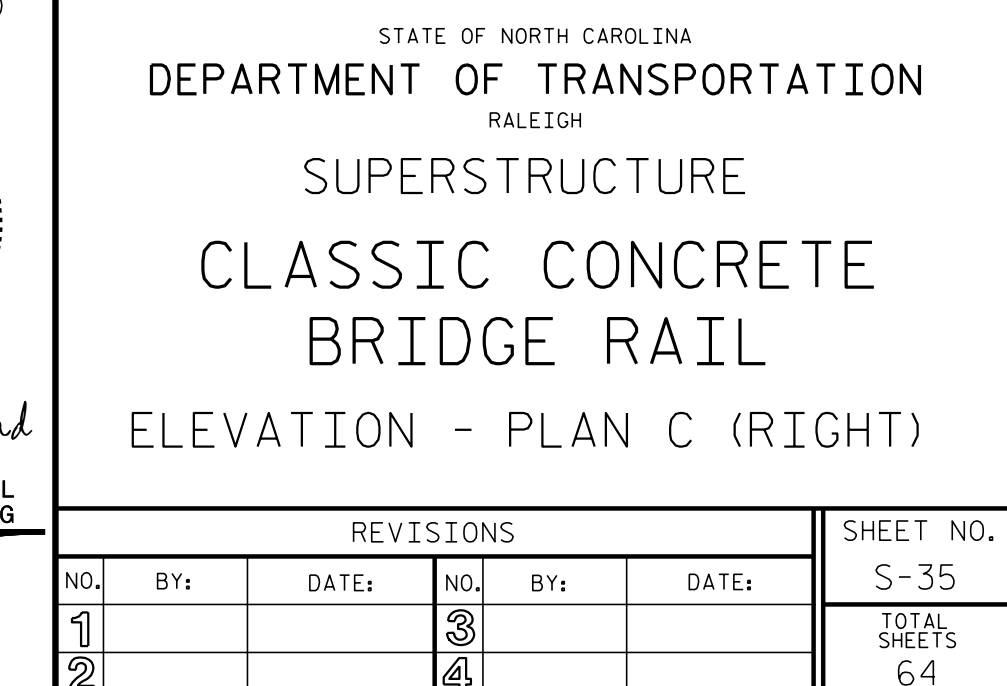


G	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
	1			3			TOTAL SHEETS
	2			4			64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



SHEET 4 OF 12



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

[illegible]

Q LIGHT POLE &
Q PVC CONDUIT
(SEE NOTES)



SHOWING LIGHTING/PEDESTRIAN SIGNAL PILASTER



SECTION B1-B1
SHOWING RAIL PILASTER



④ LIGHT/PEDESTRIAN
SIGNAL POLE &
④ PVC CONDUIT
(SEE NOTES)

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ANCHOR BOLTS FOR LIGHT POLES ARE REQUIRED IN LIGHTING PILASTER. COORDINATE WITH CITY OF LUMBERTON TO INSTALL ANCHOR BOLTS ACCORDING TO POLE MANUFACTURER SPECIFICATIONS.

ANCHOR BOLTS FOR PEDESTRIAN SIGNAL POLE ARE
REQUIRED IN PEDESTRIAN SIGNAL POLE PILASTER,
SEE ROADWAY STD. NO. 1743.01

DRAWN BY : D. HODGE DATE : 7/22
CHECKED BY : G. GILLAND DATE : 8/22

SHEET 5 OF 12

ENGINEER OF RECORD
8/20/2024



Designed by
Gregory M. Gilland
A-2009



1223 Jones Franklin Rd.
Raleigh, NC 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-4377

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUPERSTRUCTURE

CLASSIC CONCRETE

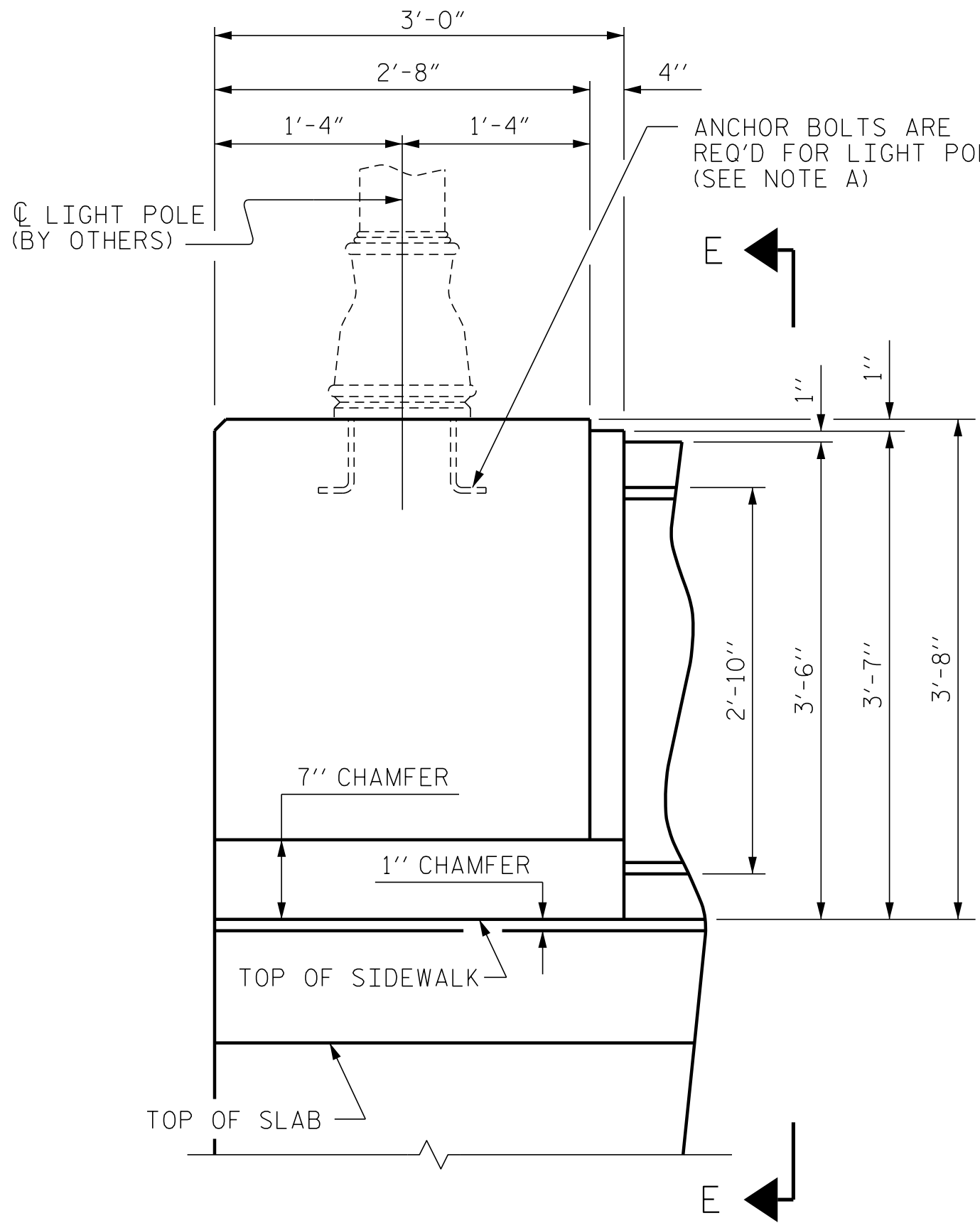
BRIDGE RAIL

PLAN DETAILS

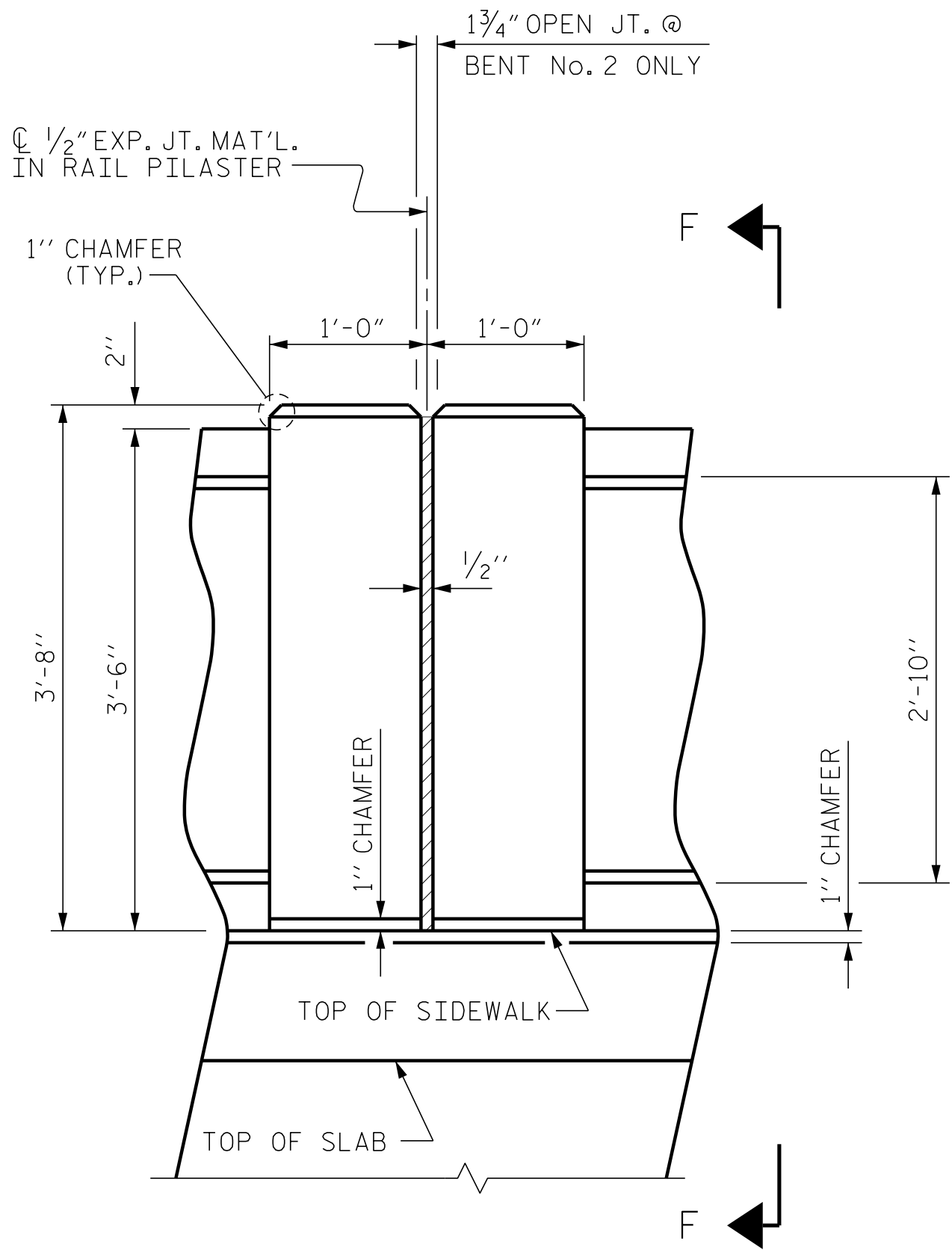
REVISIONS		
NO.	BY:	DATE:
1		
2		

REVISIONS		
NO.	BY:	DATE:
3		
4		

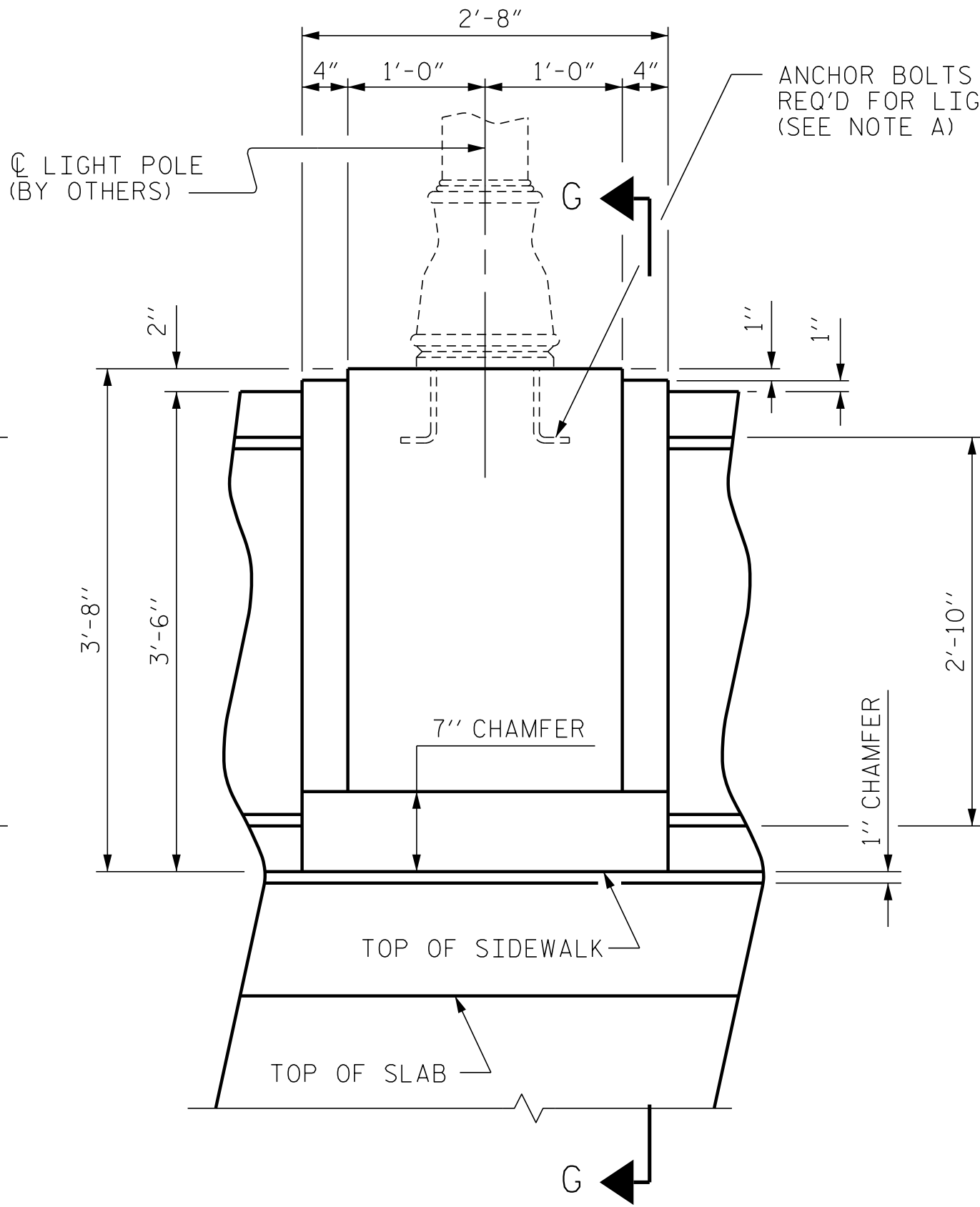
SHEET NO.	
S-36	
TOTAL SHEETS	
64	



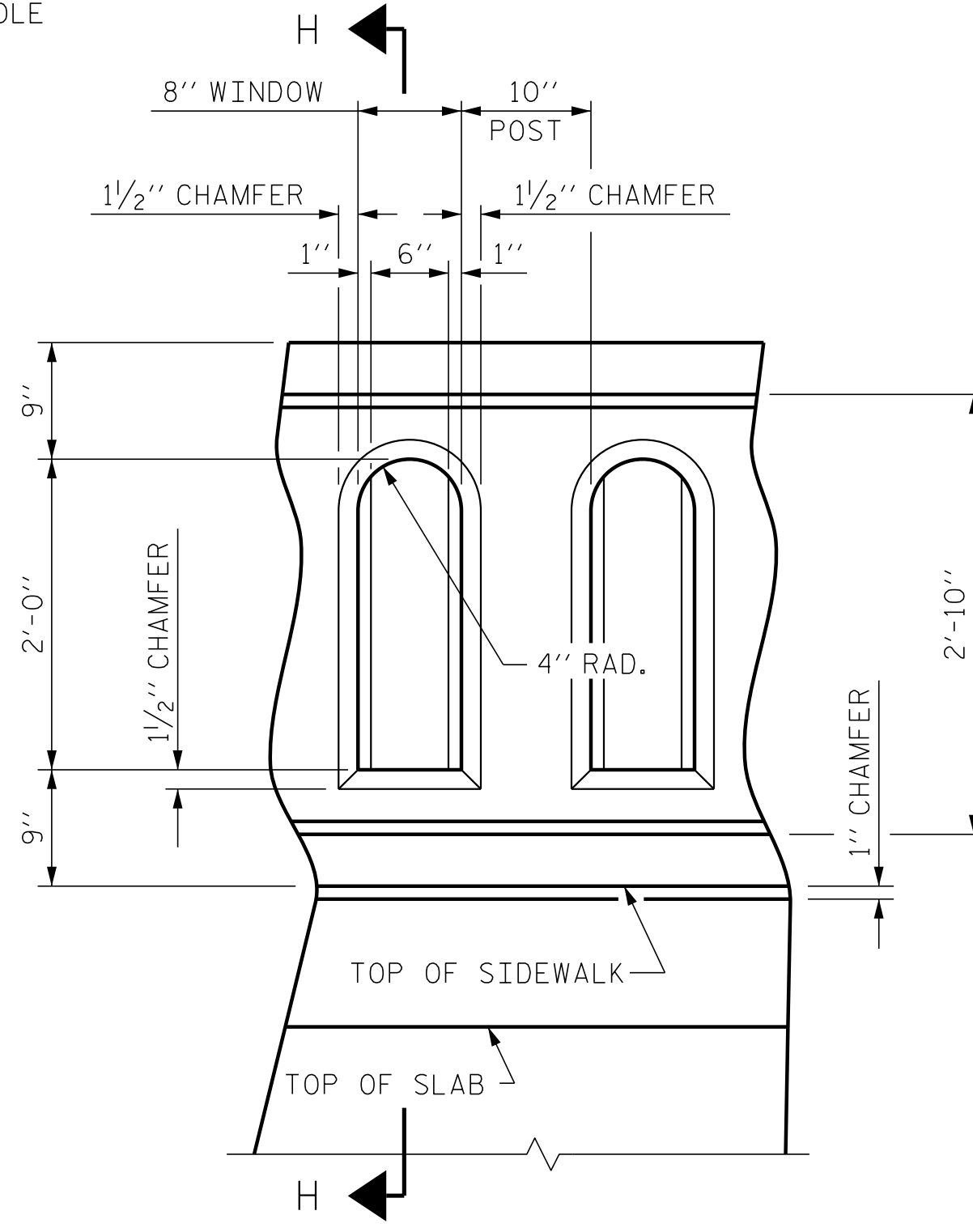
END BENT No.1 PILASTER



RAIL PILASTER

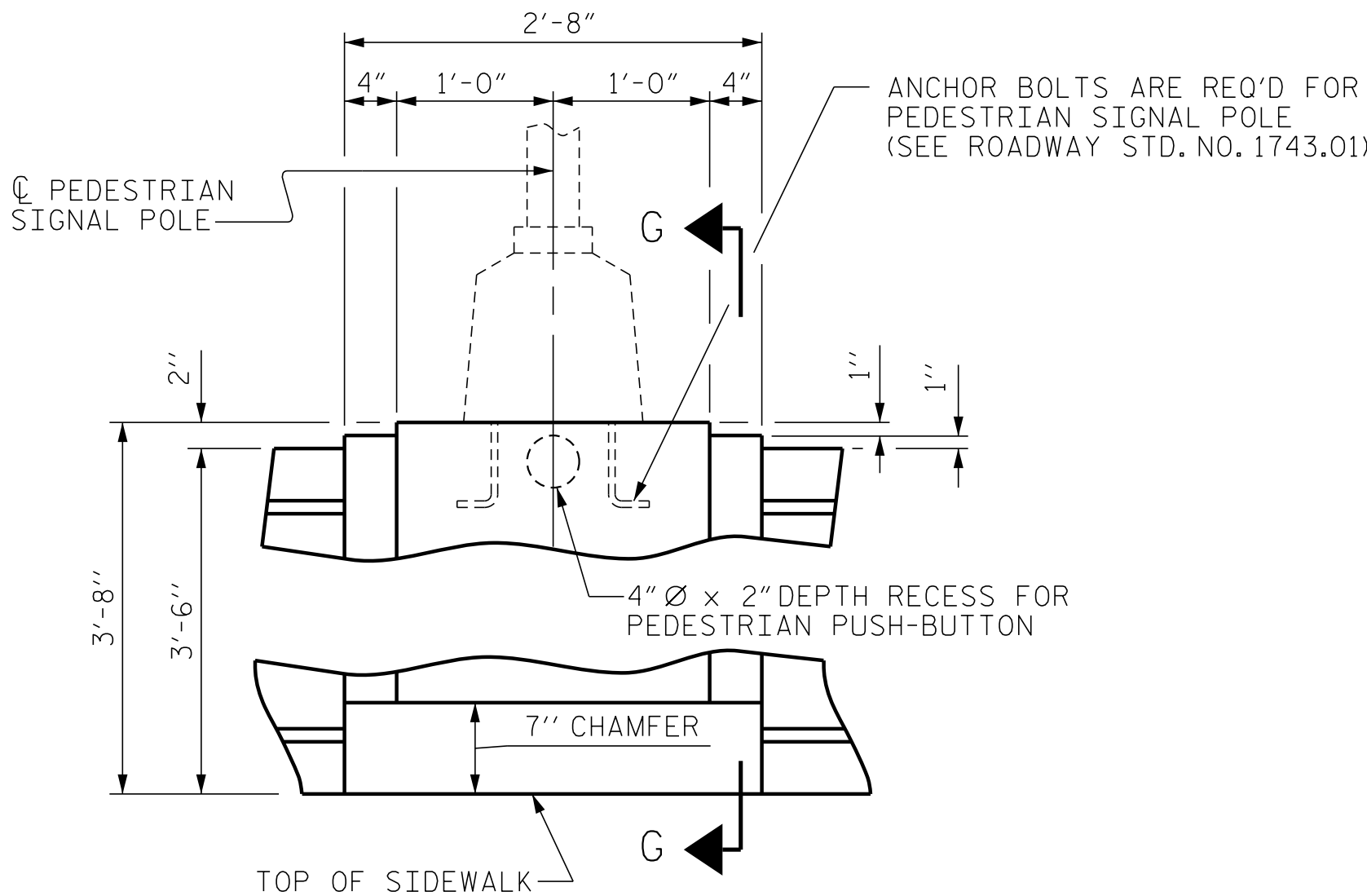


LIGHTING PILASTER



WINDOW DETAIL

WINDOW DETAILS ARE SHOWN ALONG THE INSIDE FACE OF RAIL



PEDESTRIAN SIGNAL POLE PILASTER

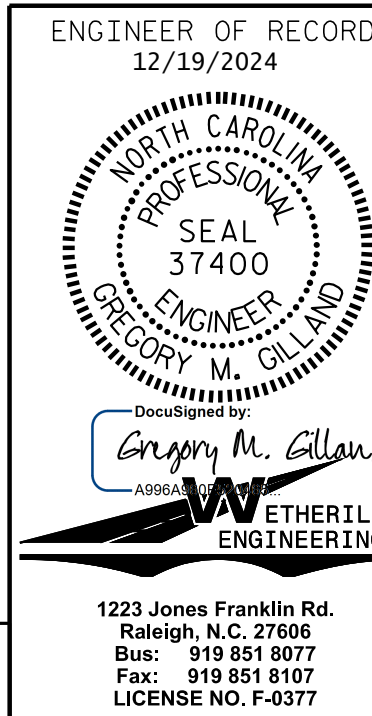
EXTERIOR ELEVATIONS

NOTE: FOR SECTIONS, SEE SHEET 7 OF 12

NOTE A:
COORDINATE WITH CITY OF LUMBERTON FOR INSTALLATION OF ANCHOR BOLTS. ANCHOR BOLT SIZE & LOCATION ARE TO BE AS SPECIFIED BY LIGHT POLE MANUFACTURER.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

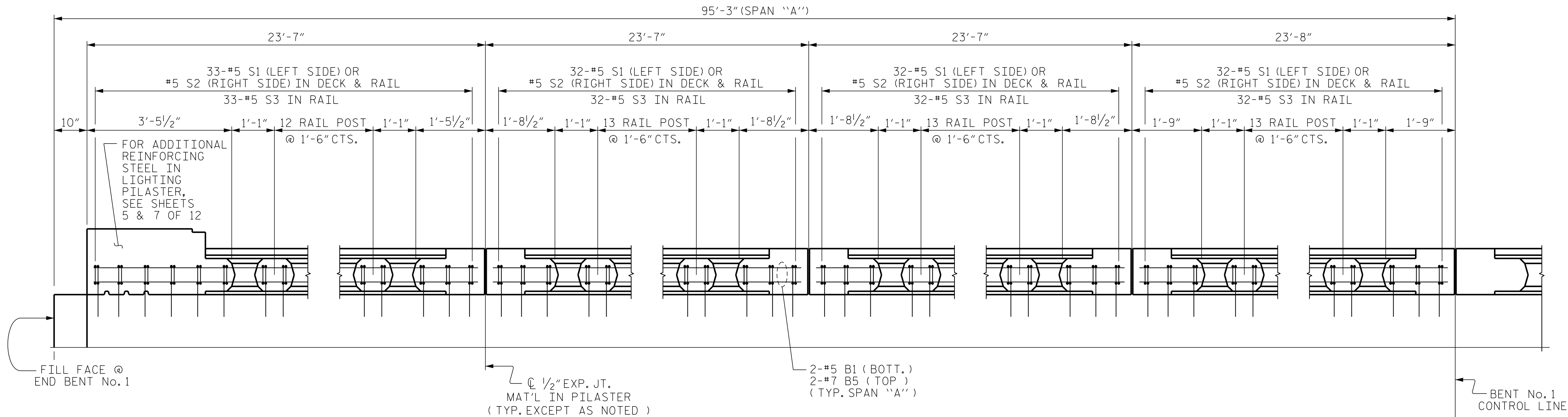
SHEET 6 OF 12



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-37
2			4			
TOTAL SHEETS						64

DRAWN BY : D. HODGE DATE : 7/22
CHECKED BY : G. GILLAND DATE : 8/22

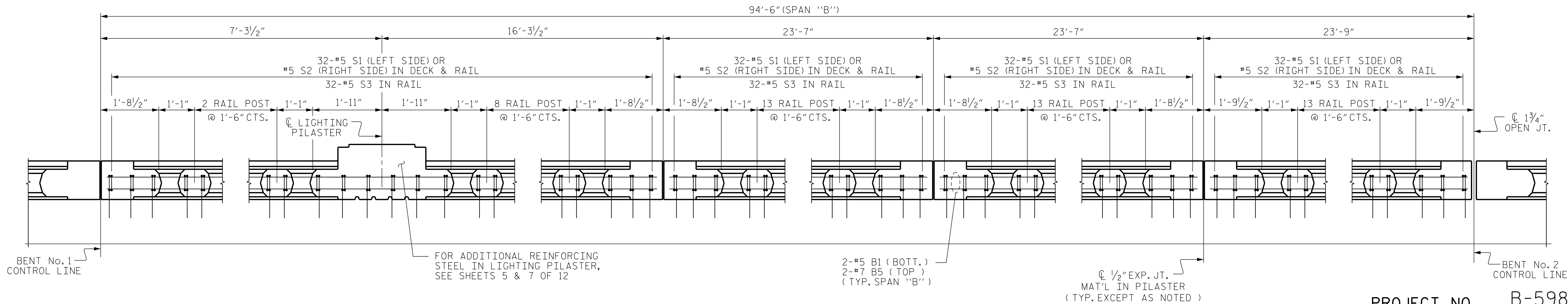
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PLAN OF SPAN "A"

(FOR EXACT PLACEMENT OF S1 OR S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR EXCEPT AS NOTED)



PLAN OF SPAN "B"

(FOR EXACT PLACEMENT OF S1 OR S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR EXCEPT AS NOTED)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 8 OF 12

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

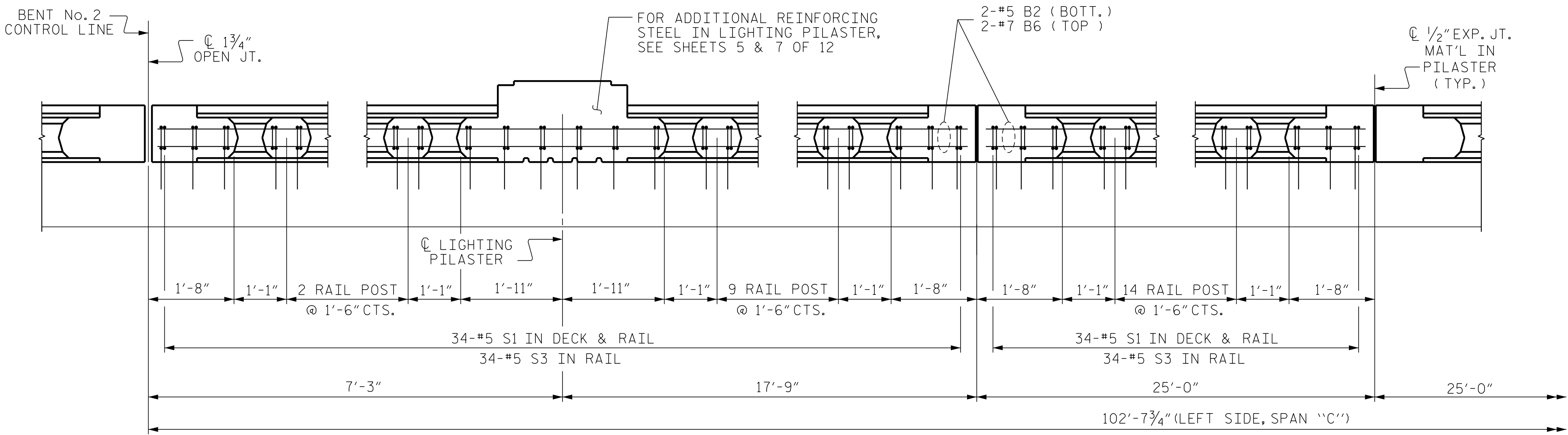
Designed by:

WETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PLAN A & B

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

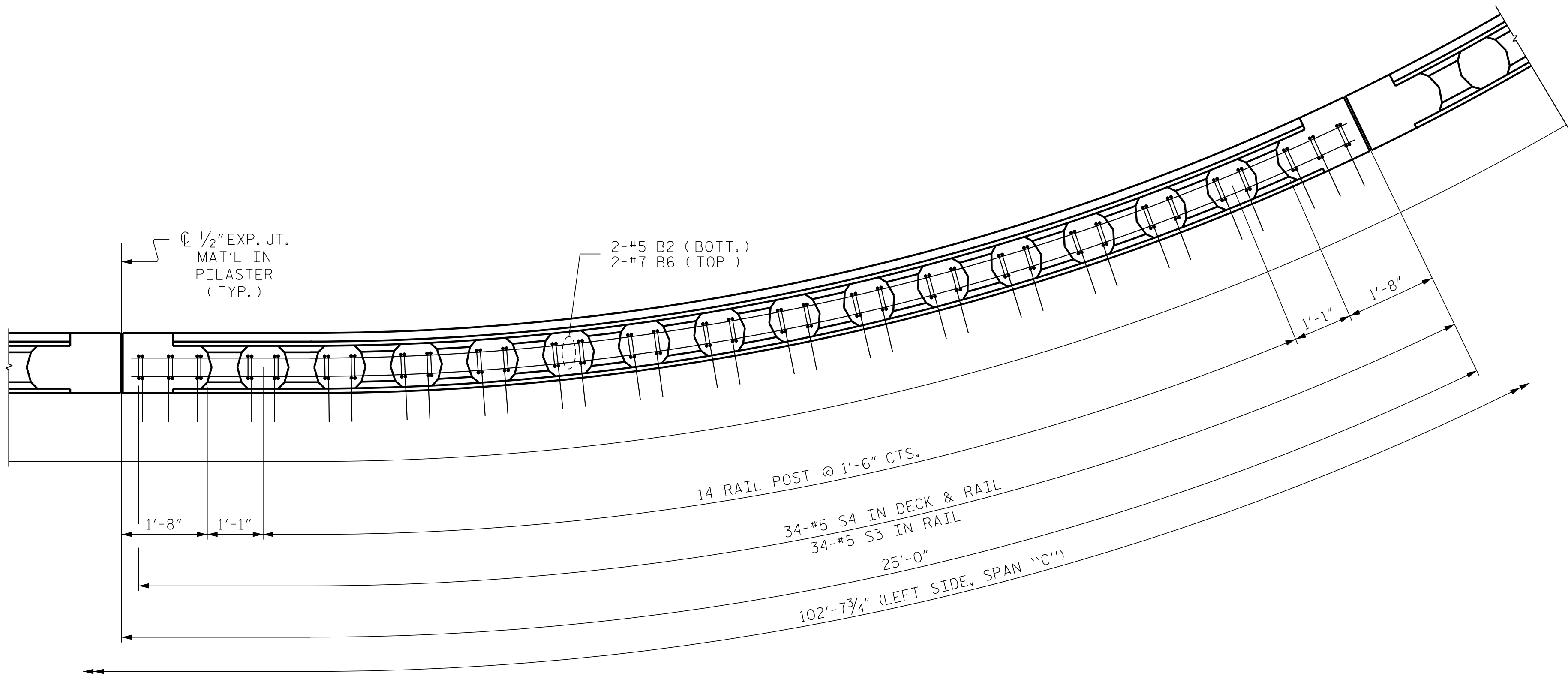
SHEET NO.	
S-39	
TOTAL SHEETS	
64	



PARTIAL PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S1 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN)



PARTIAL PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S1, S4, OR BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN)

(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 9 OF 12

ENGINEER OF RECORD
8/20/2024



Desigined by:
Gregory M. Gilland
FOR:
WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(LEFT)

REVISIONS					SHEET NO. S-40
NO.	BY:	DATE:	NO.	BY:	
1			3		TOTAL SHEETS 64
2			4		

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 8/22



— FILL FACE
@ END BENT No. 2

- FRONT FACE OF
APPROACH SLAB
@ END BENT No. 2

2-#5 B3 (BOTT.)
(2 BAR RUN)
(3'-1" SPLICE)
2-#7 B7 (TOP)
(2 BAR RUN)
(4'-4" SPLICE)

FOR ADDITIONAL REINFORCING
STEEL IN PEDESTRIAN
SIGNAL POST PILASTER,
SEE SHEETS 5 & 7 OF 12

④ 1/2" EXP. JT.
MAT'L IN
PILASTER
(TYP.)

PEDESTRIÁN
SIGNAL
PILASTER

PARTIAL PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S1, S4, OR BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(LEFT SIDE SHOWN)

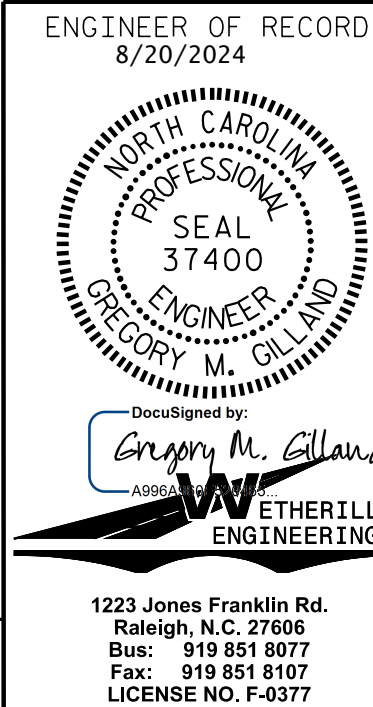
(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5985B
ROBESON COUNTY
 STATION: 22+08.00 -L-

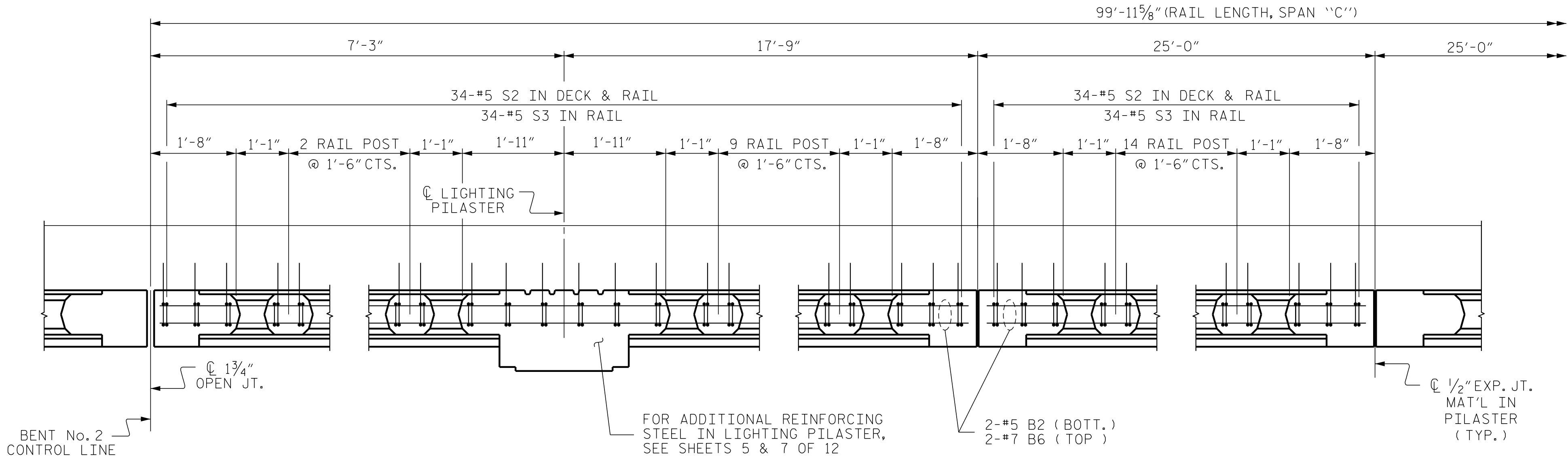
SHEET 10 OF 12



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(LEFT)

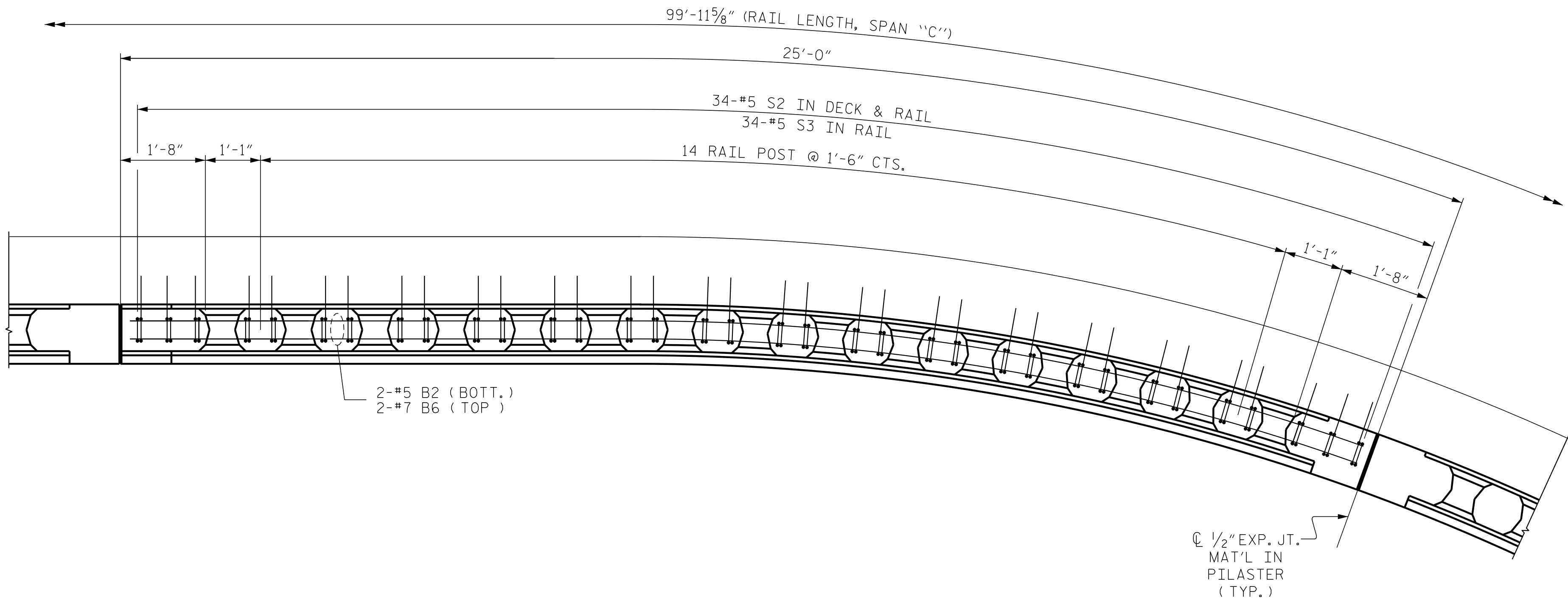
REVISIONS						SHEET NO S-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			



PARTIAL PLAN OF SPAN ``C``

(FOR EXACT PLACEMENT OF S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(RIGHT SIDE SHOWN)



PARTIAL PLAN OF SPAN ``C``

(FOR EXACT PLACEMENT OF S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(RIGHT SIDE SHOWN)

(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 11 OF 12

ENGINEER OF RECORD
8/20/2024



Designd by:
Gregory M. Gilland
WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

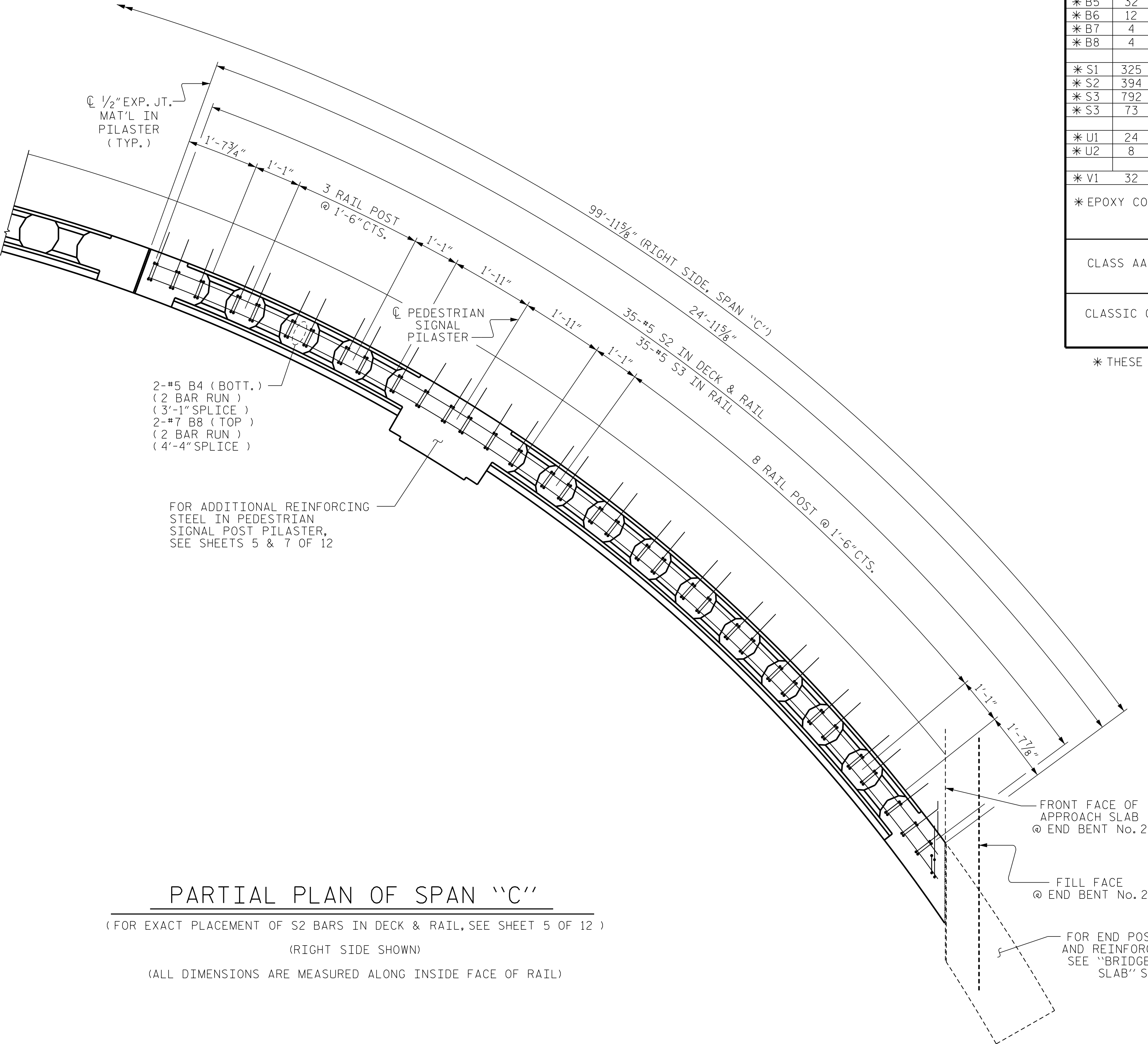
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(RIGHT)

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				S-42	TOTAL SHEETS 64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 8/22



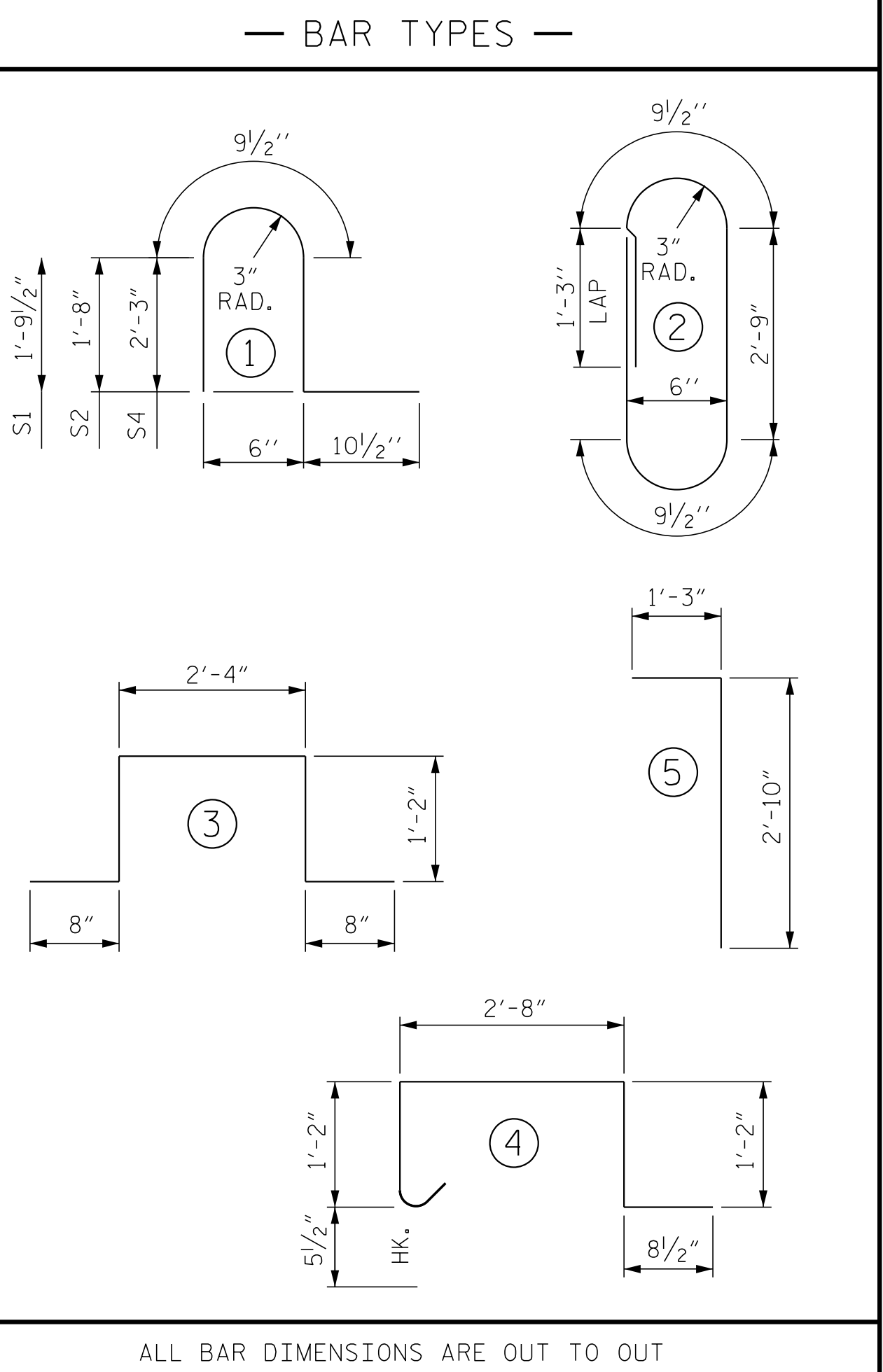
PARTIAL PLAN OF SPAN "C"

(FOR EXACT PLACEMENT OF S2 BARS IN DECK & RAIL, SEE SHEET 5 OF 12)

(RIGHT SIDE SHOWN)

(ALL DIMENSIONS ARE MEASURED ALONG INSIDE FACE OF RAIL)

BILL OF MATERIAL					
FOR CLASSIC CONCRETE BRIDGE RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	32	#5	STR	23'-2"	773
*B2	12	#5	STR	24'-7"	308
*B3	4	#5	STR	15'-6"	65
*B4	4	#5	STR	14'-1"	59
*B5	32	#7	STR	23'-2"	1,515
*B6	12	#7	STR	24'-7"	603
*B7	4	#7	STR	16'-1"	131
*B8	4	#7	STR	14'-8"	120
*S1	325	#5	1	5'-3"	1,780
*S2	394	#5	1	5'-0"	2,255
*S3	792	#5	2	8'-4"	6,884
*S3	73	#5	2	6'-2"	470
*U1	24	#5	3	6'-0"	150
*U2	8	#5	4	6'-2"	51
*V1	32	#5	5	4'-1"	136
*EPOXY COATED REINFORCING STEEL				15,100 LBS.	
CLASS AA CONCRETE				76.5 CU. YDS.	
CLASSIC CONCRETE BRIDGE RAIL				580.45 LIN. FT.	
* THESE BARS ARE EPOXY COATED					



NOTES:

FOR EACH STAGE, CLASSIC CONCRETE BRIDGE RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN THE CLASSIC CONCRETE BRIDGE RAIL SHALL BE EPOXY COATED.

SIDEWALK QUANTITIES ARE SHOWN ON THE "SIDEWALK DETAIL" SHEET.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 12 OF 12

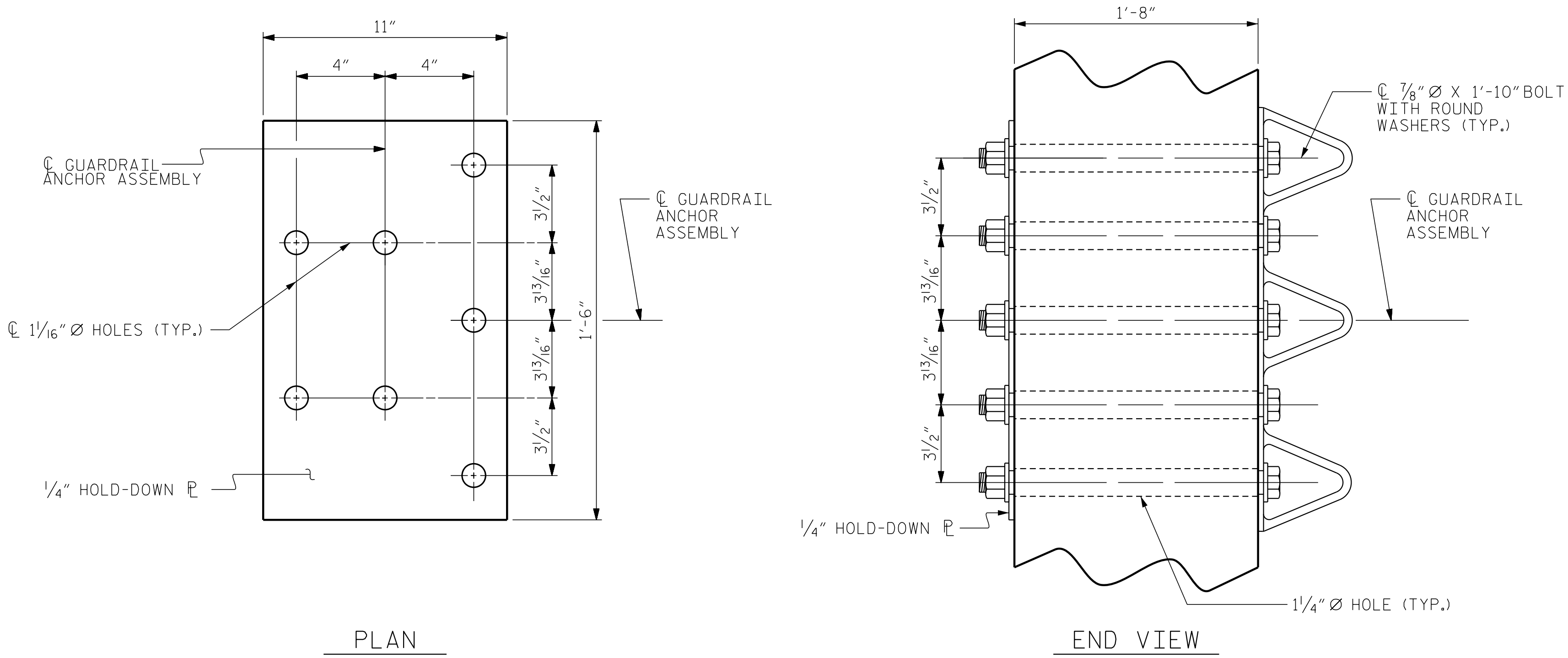
ENGINEER OF RECORD
8/20/2024

Discussed by:

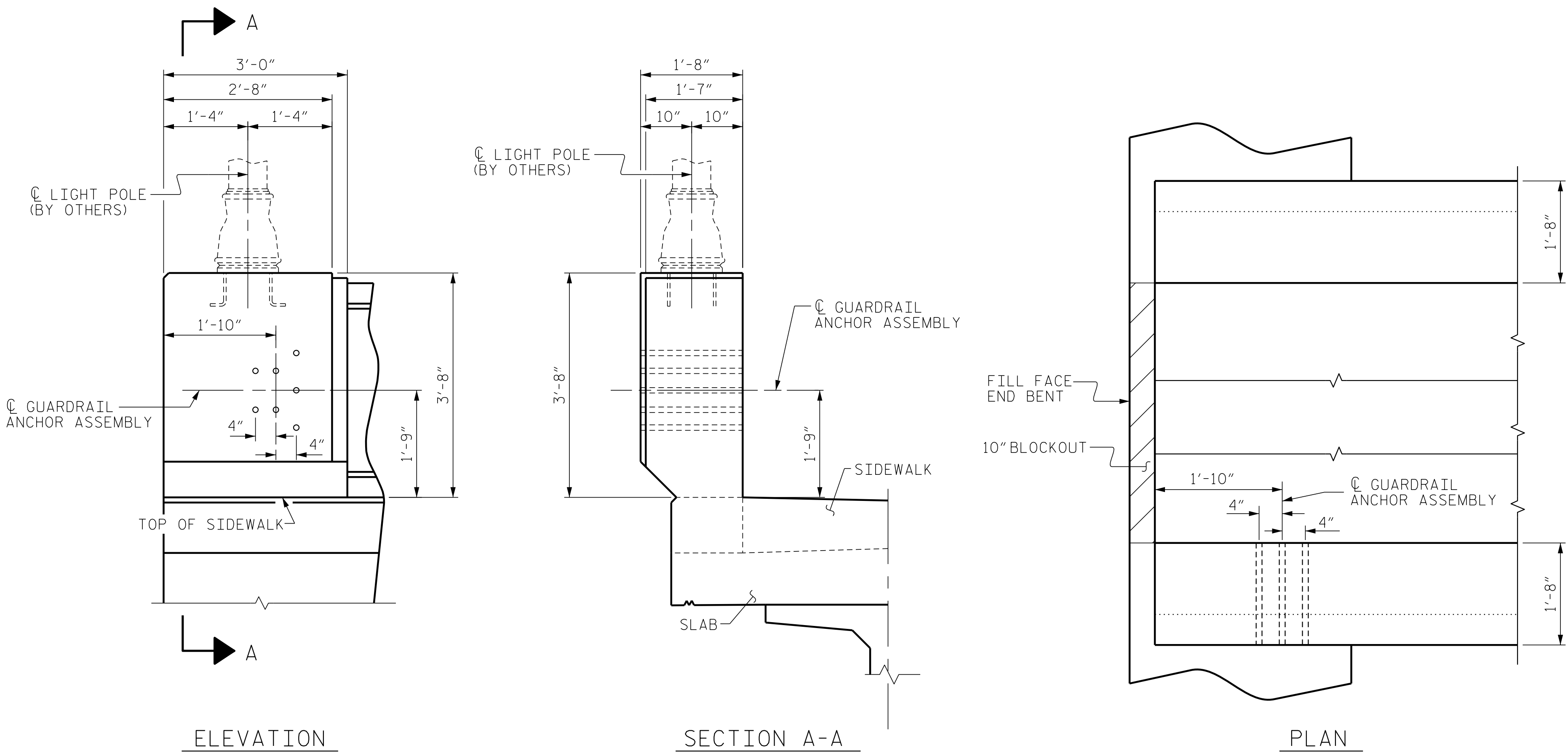
GREGORY M. GILLAND
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
CLASSIC CONCRETE
BRIDGE RAIL
PLAN DETAILS - PARTIAL PLAN C
(RIGHT)
REVISIONS
NO. BY: DATE: NO. BY: DATE:
1 3 4
SHEET NO.
S-43
TOTAL SHEETS
64

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402-001_B-5985-SITE 2 770175_SKU_GRadgn 4/26/2024 9:18:59 AM



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SHOWN ON THE APPROACH SLAB.

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307, THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

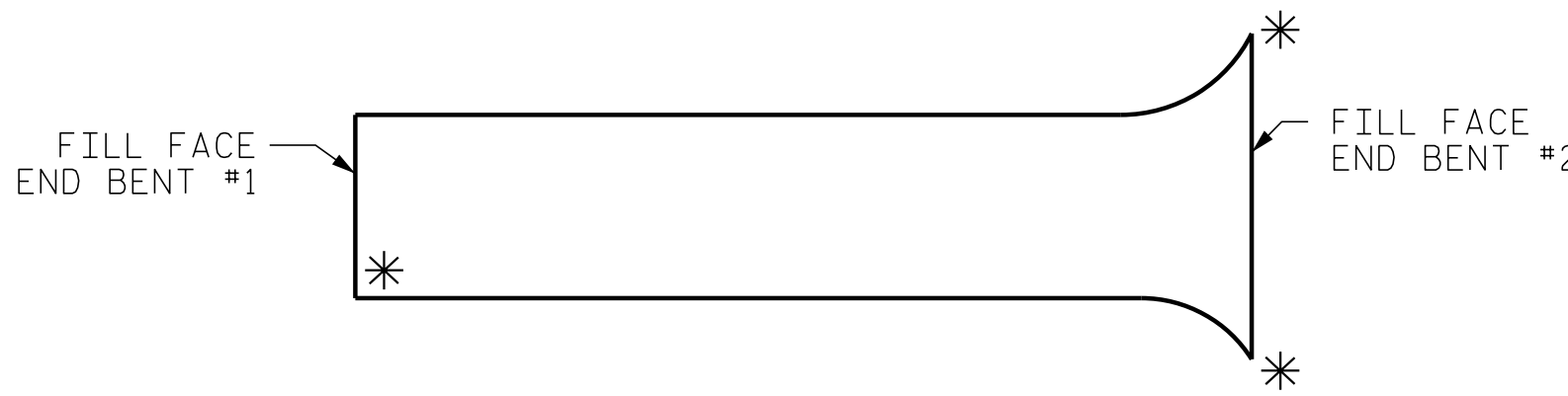
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF CLASSIC CONCRETE BRIDGE RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASSIC CONCRETE BRIDGE RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE CLASSIC CONCRETE BRIDGE RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

DRAWN BY : G. GILLAND DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400
CIVIL ENGINEER
GREGORY M. GILLAND

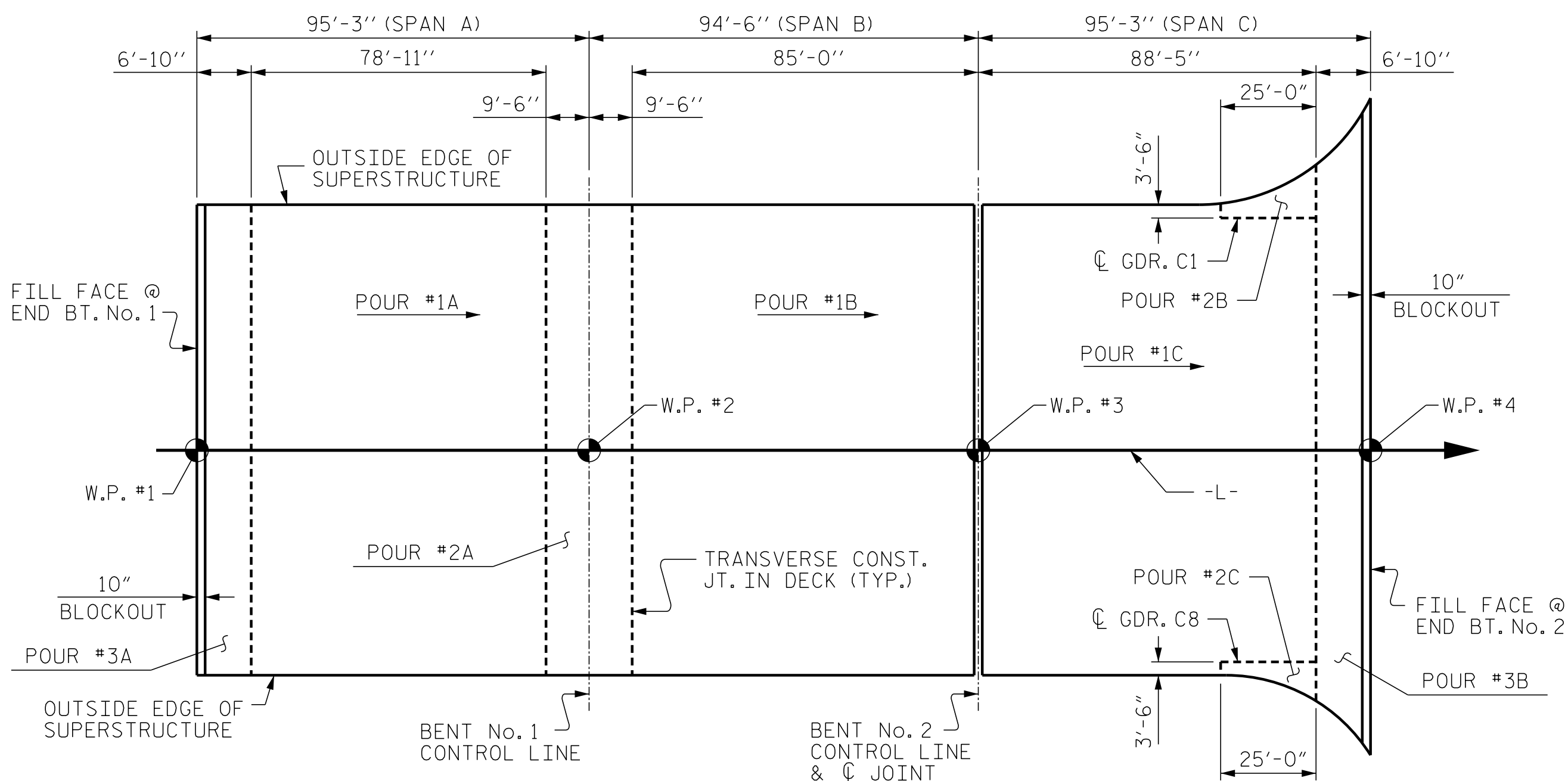
Designed by:
Gregory M. Gilland
AND
WETHERILL ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

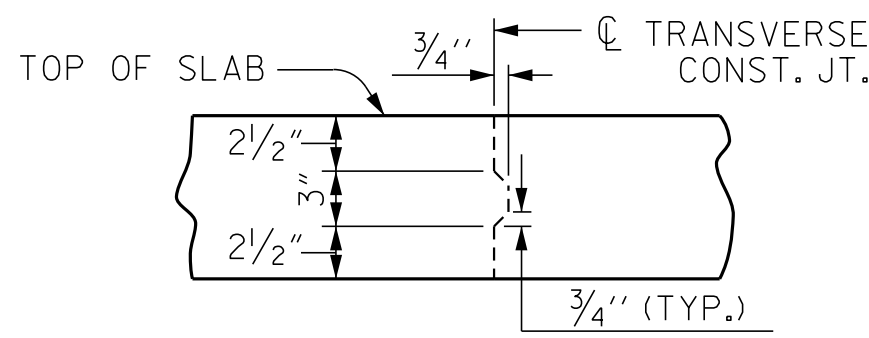
GUARDRAIL ANCHORAGE DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			64

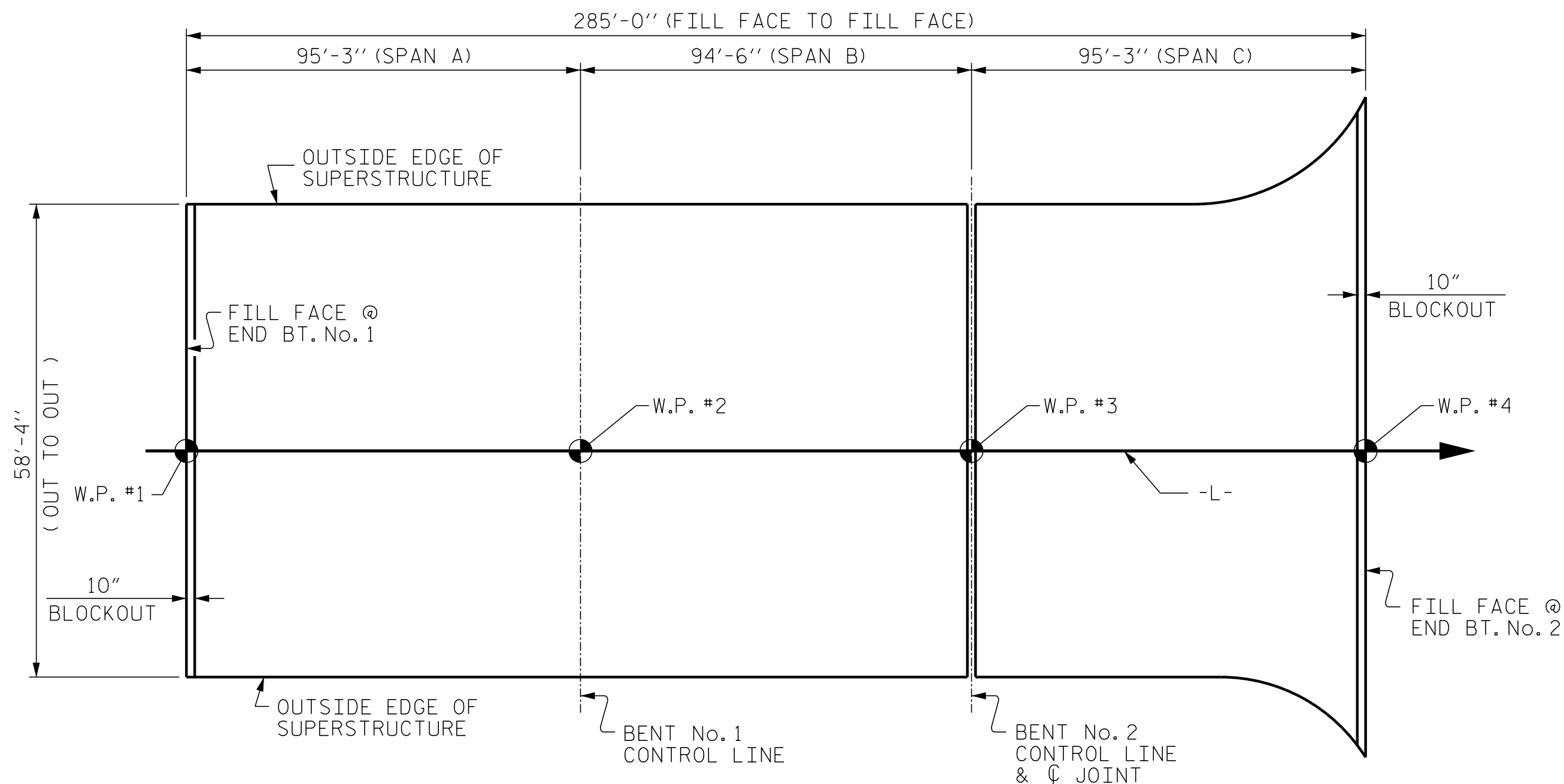


CONCRETE DECK POUR DETAIL
BLOCKOUT FOR ELASTOMERIC CONCRETE AT BENT No. 2 NOT SHOWN FOR CLARITY.

NOTE :
POUR #3B INCLUDES UPPER
PART AND WINGS OF INTEGRAL
END BENT No. 2.



TRANSVERSE CONST. JOINT DETAIL
NOTE: SLAB REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 17,131)

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

REGISTERED ENGINEER
GREGORY M. GILLAND

Described by:
Gregory M. Gilland

APPRAISED BY
WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

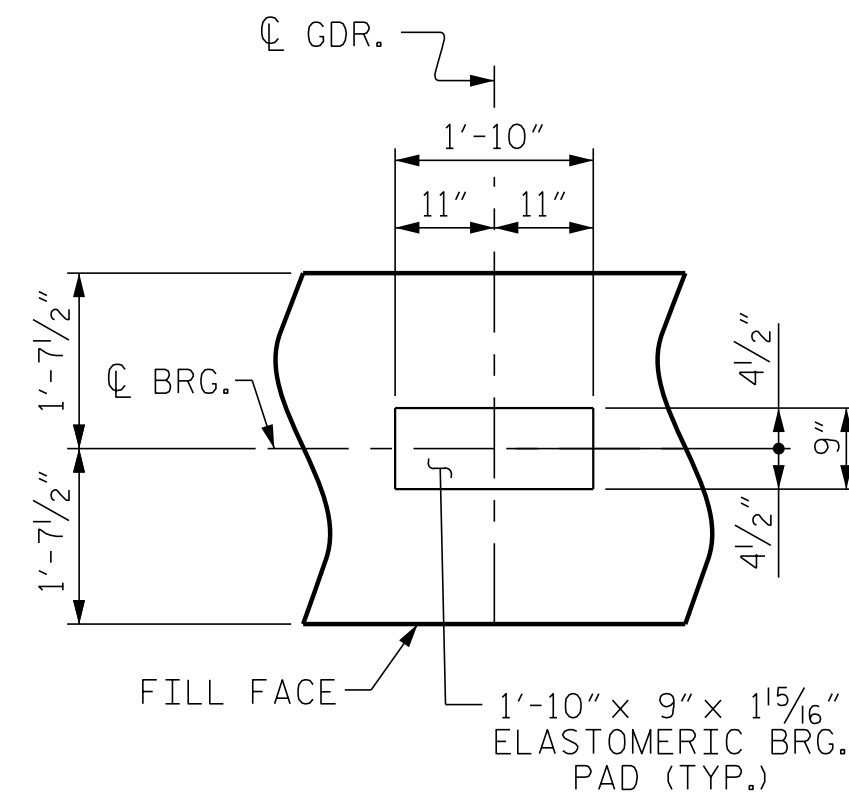
SUPERSTRUCTURE
BILL OF MATERIAL

REVISIONS						SHEET NO. S-46
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

DRAWN BY : D. HODGE DATE : 3/22
CHECKED BY : G. GILLAND DATE : 7/22

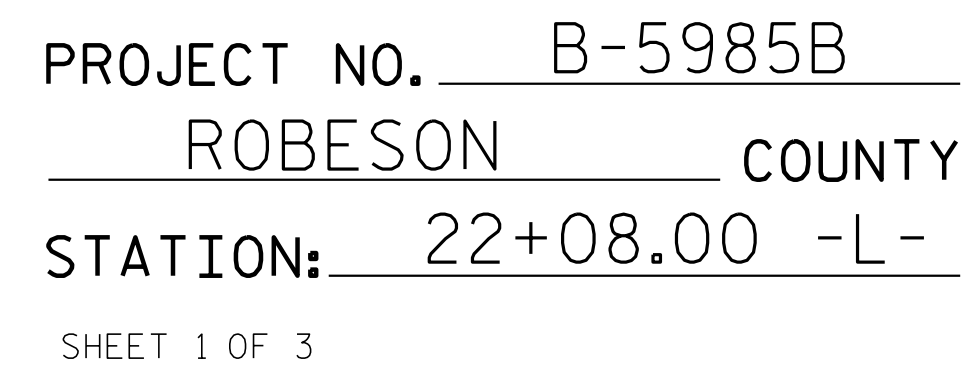
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_BM.dgn 4/26/2024 9:20:35 AM



DETAIL "A"

(TYP. EA. BRG.)



FOR SECTION A-A & SECTION B-B, SEE SHEET 3 OF 3.

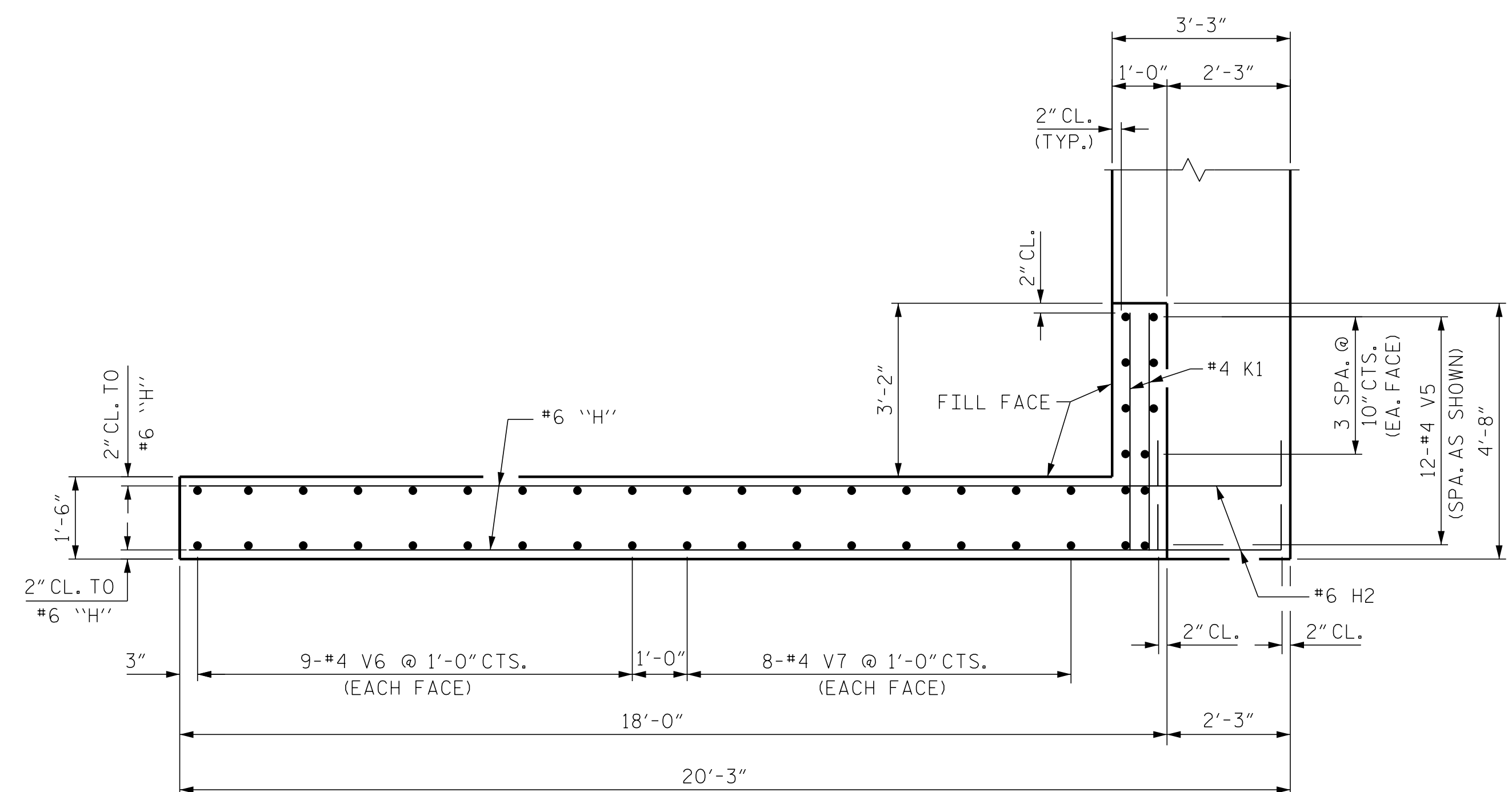


SUBSTRUCTURE
END BENT No. 1

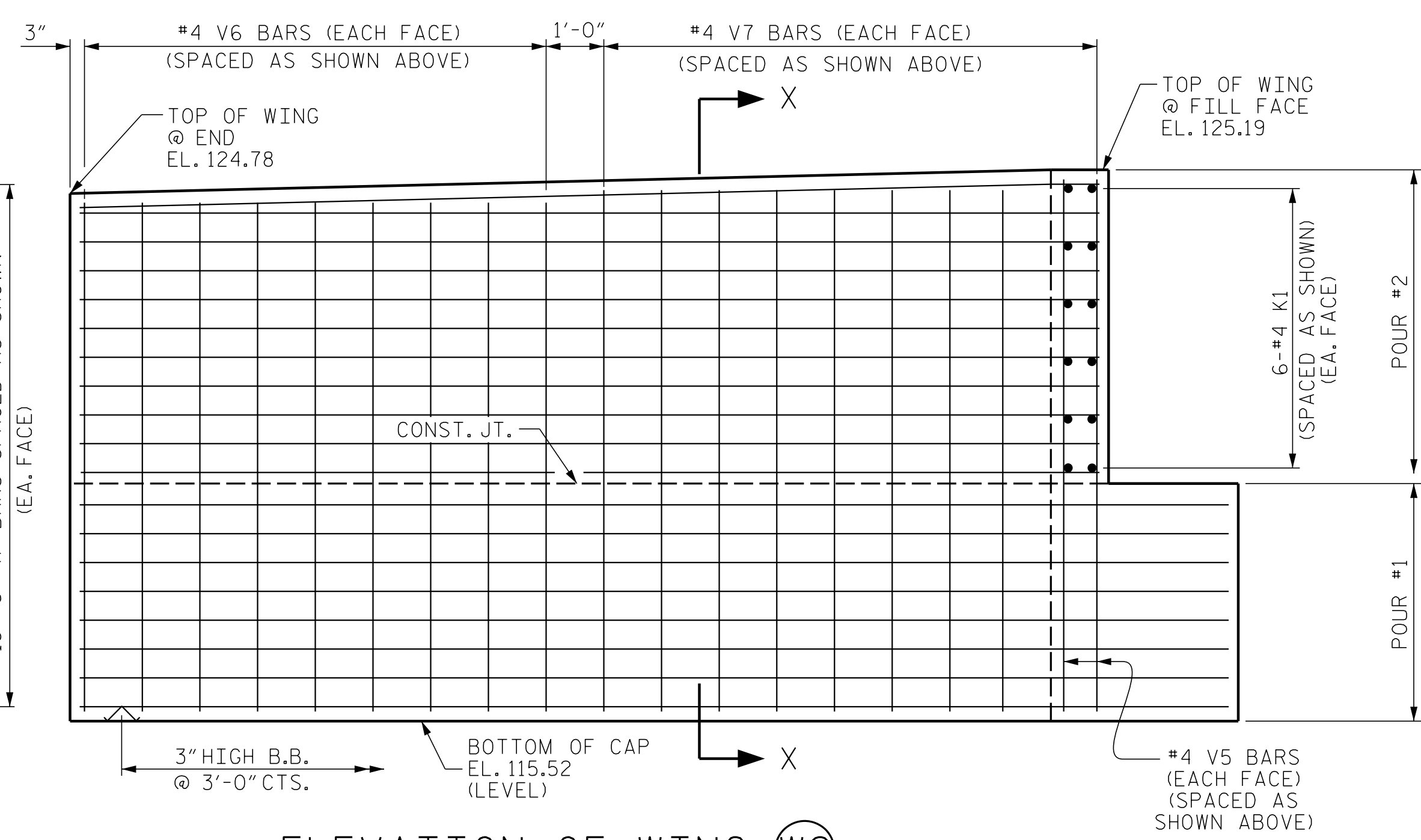
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-47 TOTAL SHEETS 64
2			4			

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 7/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



PLAN OF WING (W2)

ELEVATION OF WING (W2)

SHEET 2 OF 3

ENGINEER OF RECORD
8/20/2024



designed by:
Gregory M. Gilland
4000 **W. ETHERILL**
ENGINEERING

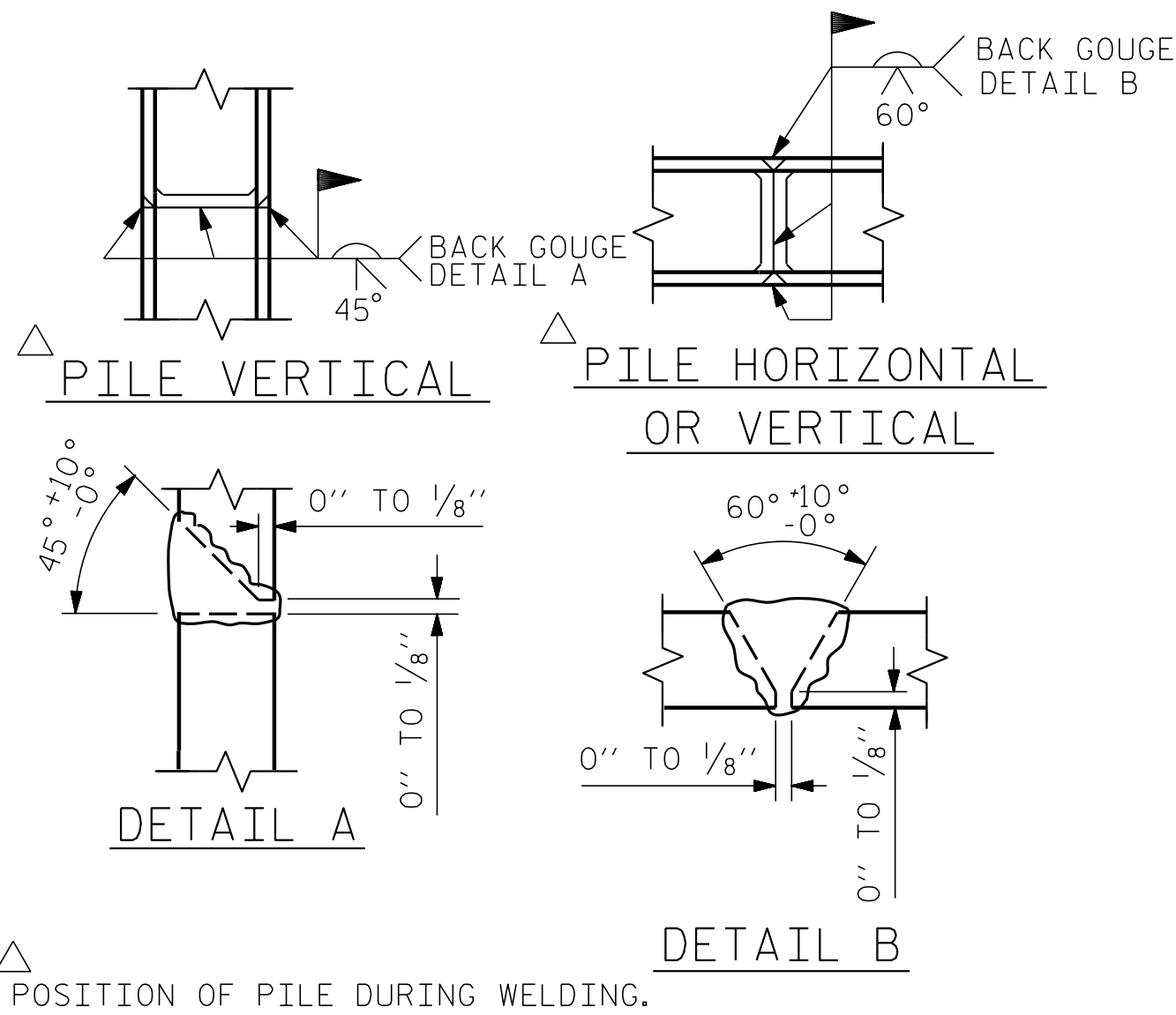
1223 Jones Franklin Rd.
Raleigh, N.C. 27607
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

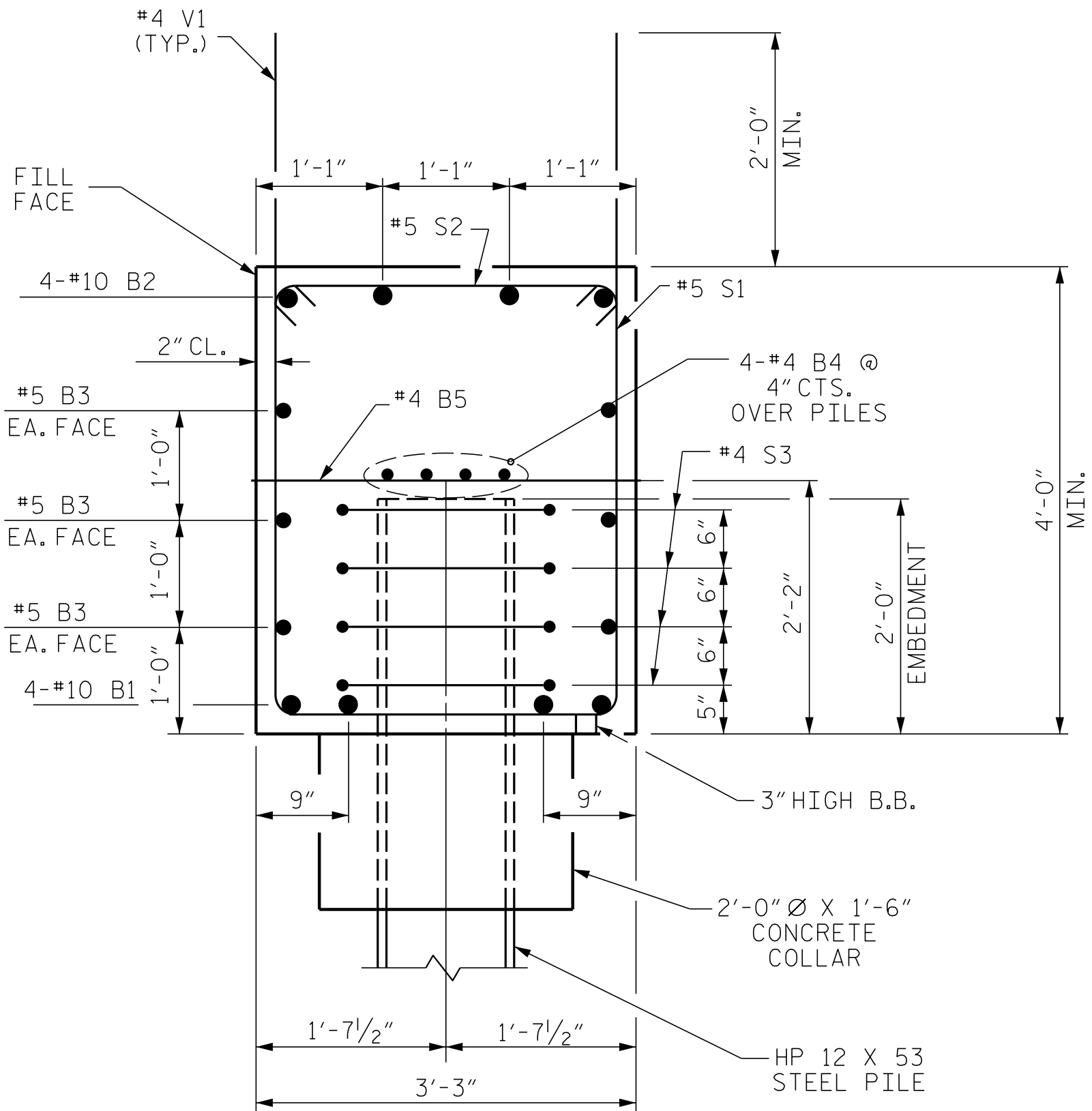
SUBSTRUCTURE
END BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-48 TOTAL SHEETS 64
2			4			

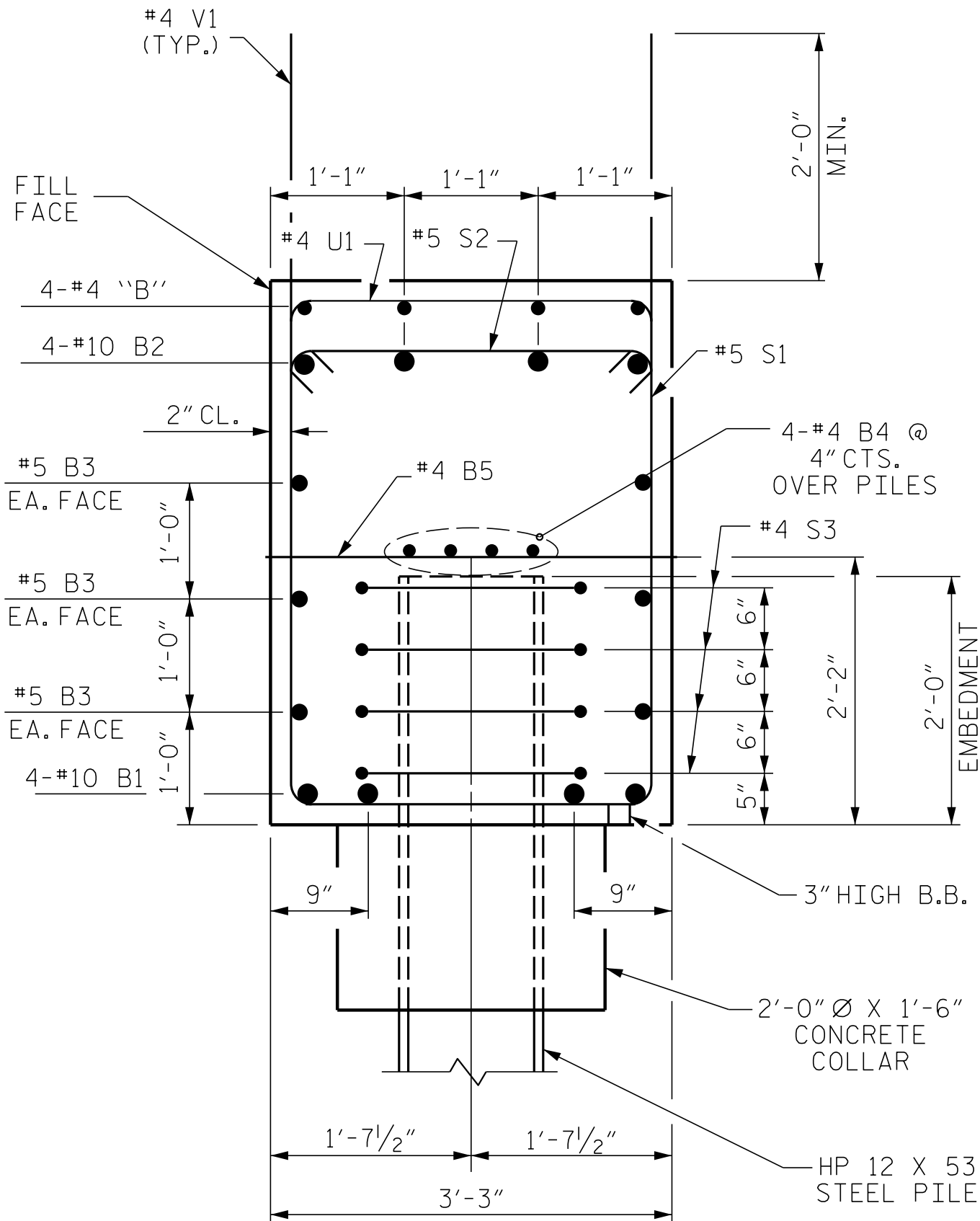
PA201818156.01 B-5985 RobesonStructuresStr.-2 (770175)NDGN402_001 B-5985-SITE 2 770175_SKU_EBdgn 4/26/2024 9:22:55 AM



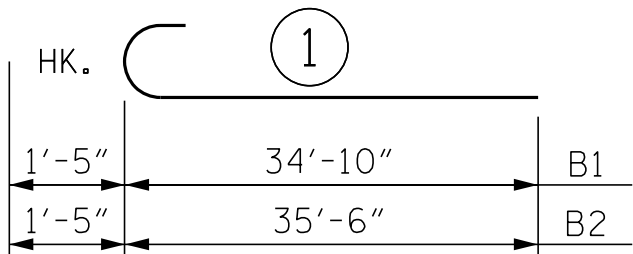
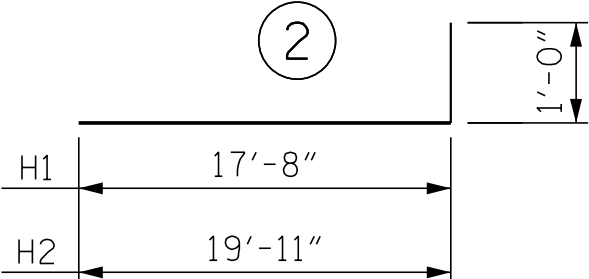
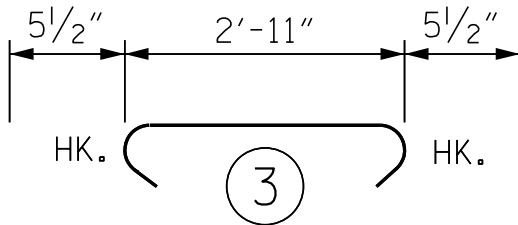
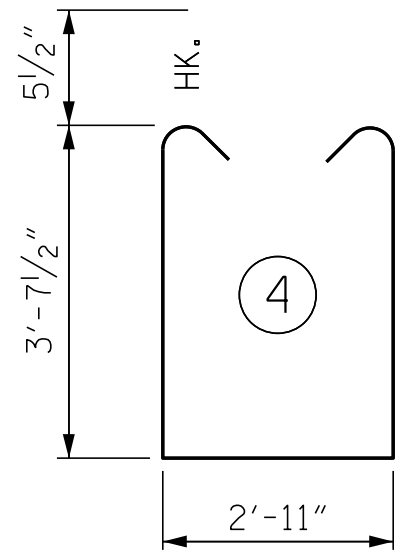
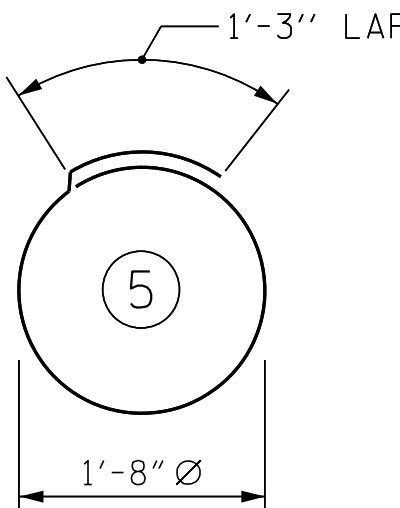
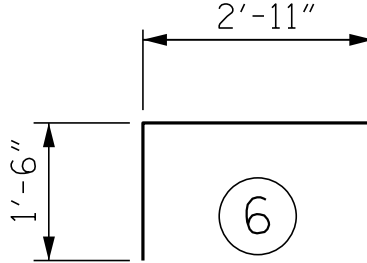
PILE SPLICE DETAILS



SECTION A-A



SECTION B-B

BAR TYPES		BILL OF MATERIAL																																																					
		END BENT No. 1																																																					
		<table><tr><th>BAR</th><th>NO.</th><th>SIZE</th><th>TYPE</th><th>LENGTH</th><th>WEIGHT</th></tr><tr><td>B1</td><td>8</td><td>#10</td><td>1</td><td>36'-3"</td><td>1,248</td></tr><tr><td>B2</td><td>8</td><td>#10</td><td>1</td><td>36'-11"</td><td>1,271</td></tr><tr><td>B3</td><td>12</td><td>#5</td><td>STR</td><td>34'-0"</td><td>426</td></tr><tr><td>B4</td><td>8</td><td>#4</td><td>STR</td><td>33'-9"</td><td>180</td></tr><tr><td>B5</td><td>17</td><td>#4</td><td>STR</td><td>2'-11"</td><td>33</td></tr><tr><td>B6</td><td>4</td><td>#4</td><td>STR</td><td>32'-4"</td><td>86</td></tr><tr><td>B7</td><td>4</td><td>#4</td><td>STR</td><td>3'-0"</td><td>8</td></tr></table>						BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	B1	8	#10	1	36'-3"	1,248	B2	8	#10	1	36'-11"	1,271	B3	12	#5	STR	34'-0"	426	B4	8	#4	STR	33'-9"	180	B5	17	#4	STR	2'-11"	33	B6	4	#4	STR	32'-4"	86	B7	4	#4	STR	3'-0"	8
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT																																																		
B1	8	#10	1	36'-3"	1,248																																																		
B2	8	#10	1	36'-11"	1,271																																																		
B3	12	#5	STR	34'-0"	426																																																		
B4	8	#4	STR	33'-9"	180																																																		
B5	17	#4	STR	2'-11"	33																																																		
B6	4	#4	STR	32'-4"	86																																																		
B7	4	#4	STR	3'-0"	8																																																		
		<table><tr><td>H1</td><td>44</td><td>#6</td><td>2</td><td>18'-8"</td><td>1,234</td></tr><tr><td>H2</td><td>32</td><td>#6</td><td>2</td><td>20'-11"</td><td>1,005</td></tr></table>						H1	44	#6	2	18'-8"	1,234	H2	32	#6	2	20'-11"	1,005																																				
H1	44	#6	2	18'-8"	1,234																																																		
H2	32	#6	2	20'-11"	1,005																																																		
		<table><tr><td>K1</td><td>24</td><td>#4</td><td>STR</td><td>4'-4"</td><td>69</td></tr></table>						K1	24	#4	STR	4'-4"	69																																										
K1	24	#4	STR	4'-4"	69																																																		
		<table><tr><td>S1</td><td>112</td><td>#5</td><td>4</td><td>11'-1"</td><td>1,295</td></tr><tr><td>S2</td><td>112</td><td>#5</td><td>3</td><td>3'-10"</td><td>448</td></tr><tr><td>S3</td><td>44</td><td>#4</td><td>5</td><td>6'-6"</td><td>191</td></tr></table>						S1	112	#5	4	11'-1"	1,295	S2	112	#5	3	3'-10"	448	S3	44	#4	5	6'-6"	191																														
S1	112	#5	4	11'-1"	1,295																																																		
S2	112	#5	3	3'-10"	448																																																		
S3	44	#4	5	6'-6"	191																																																		
		<table><tr><td>U1</td><td>25</td><td>#4</td><td>6</td><td>5'-11"</td><td>99</td></tr></table>						U1	25	#4	6	5'-11"	99																																										
U1	25	#4	6	5'-11"	99																																																		
ALL BAR DIMENSIONS ARE OUT TO OUT.		<table><tr><td>V1</td><td>60</td><td>#4</td><td>STR</td><td>5'-10"</td><td>234</td></tr><tr><td>V2</td><td>12</td><td>#4</td><td>STR</td><td>9'-4"</td><td>75</td></tr><tr><td>V3</td><td>16</td><td>#4</td><td>STR</td><td>9'-1"</td><td>97</td></tr><tr><td>V4</td><td>18</td><td>#4</td><td>STR</td><td>8'-11"</td><td>107</td></tr><tr><td>V5</td><td>12</td><td>#4</td><td>STR</td><td>9'-2"</td><td>73</td></tr><tr><td>V6</td><td>18</td><td>#4</td><td>STR</td><td>8'-9"</td><td>105</td></tr><tr><td>V7</td><td>16</td><td>#4</td><td>STR</td><td>9'-0"</td><td>96</td></tr></table>						V1	60	#4	STR	5'-10"	234	V2	12	#4	STR	9'-4"	75	V3	16	#4	STR	9'-1"	97	V4	18	#4	STR	8'-11"	107	V5	12	#4	STR	9'-2"	73	V6	18	#4	STR	8'-9"	105	V7	16	#4	STR	9'-0"	96						
V1	60	#4	STR	5'-10"	234																																																		
V2	12	#4	STR	9'-4"	75																																																		
V3	16	#4	STR	9'-1"	97																																																		
V4	18	#4	STR	8'-11"	107																																																		
V5	12	#4	STR	9'-2"	73																																																		
V6	18	#4	STR	8'-9"	105																																																		
V7	16	#4	STR	9'-0"	96																																																		
		REINFORCING STEEL				8,380 LBS.																																																	
		CLASS A CONCRETE BREAKDOWN																																																					
		POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS				43.2 C.Y.																																																	
		POUR #2 UPPER PART OF WINGS				12.0 C.Y.																																																	
		TOTAL CLASS A CONCRETE				55.2 C.Y.																																																	

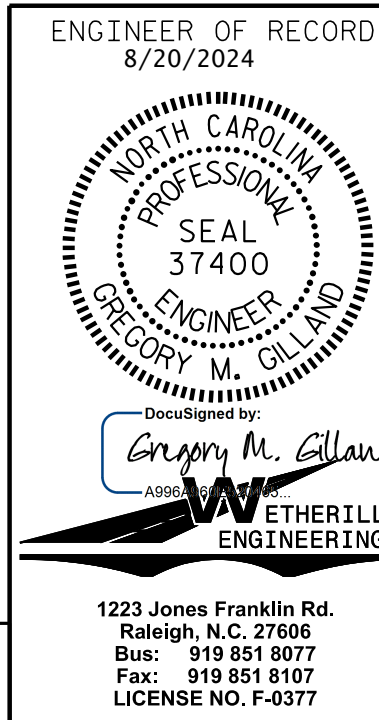
NOTES
THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1

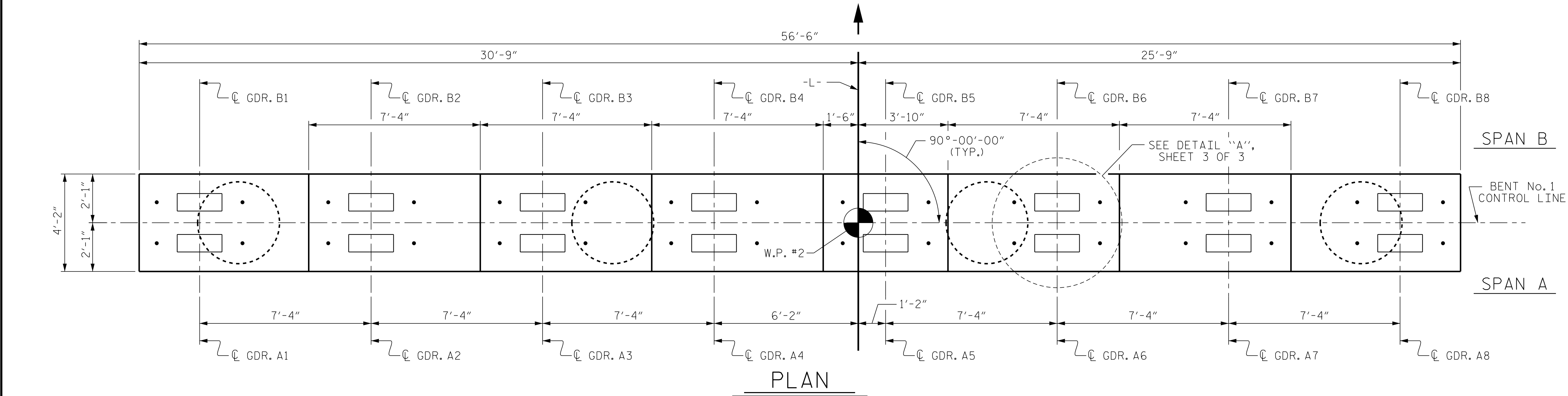
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-49
2			4			TOTAL SHEETS 64

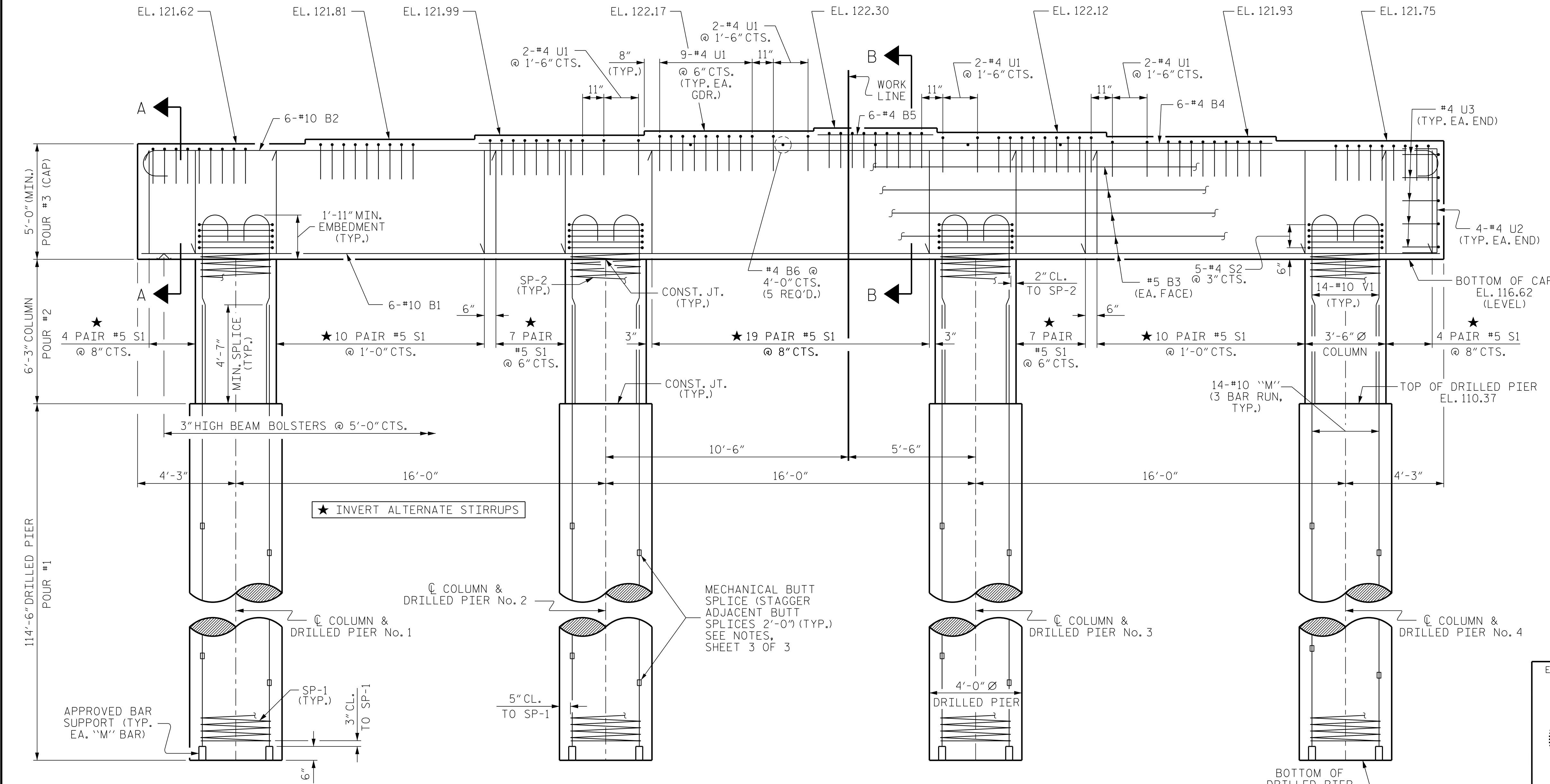
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 7/22

PA201818156.01 B-5985 RobesonStructuresStr-2 (770175NDGN402-001.B-5985-SITE 2 770175_SKU_BT.dgn 4/26/2024 9:24:57 AM

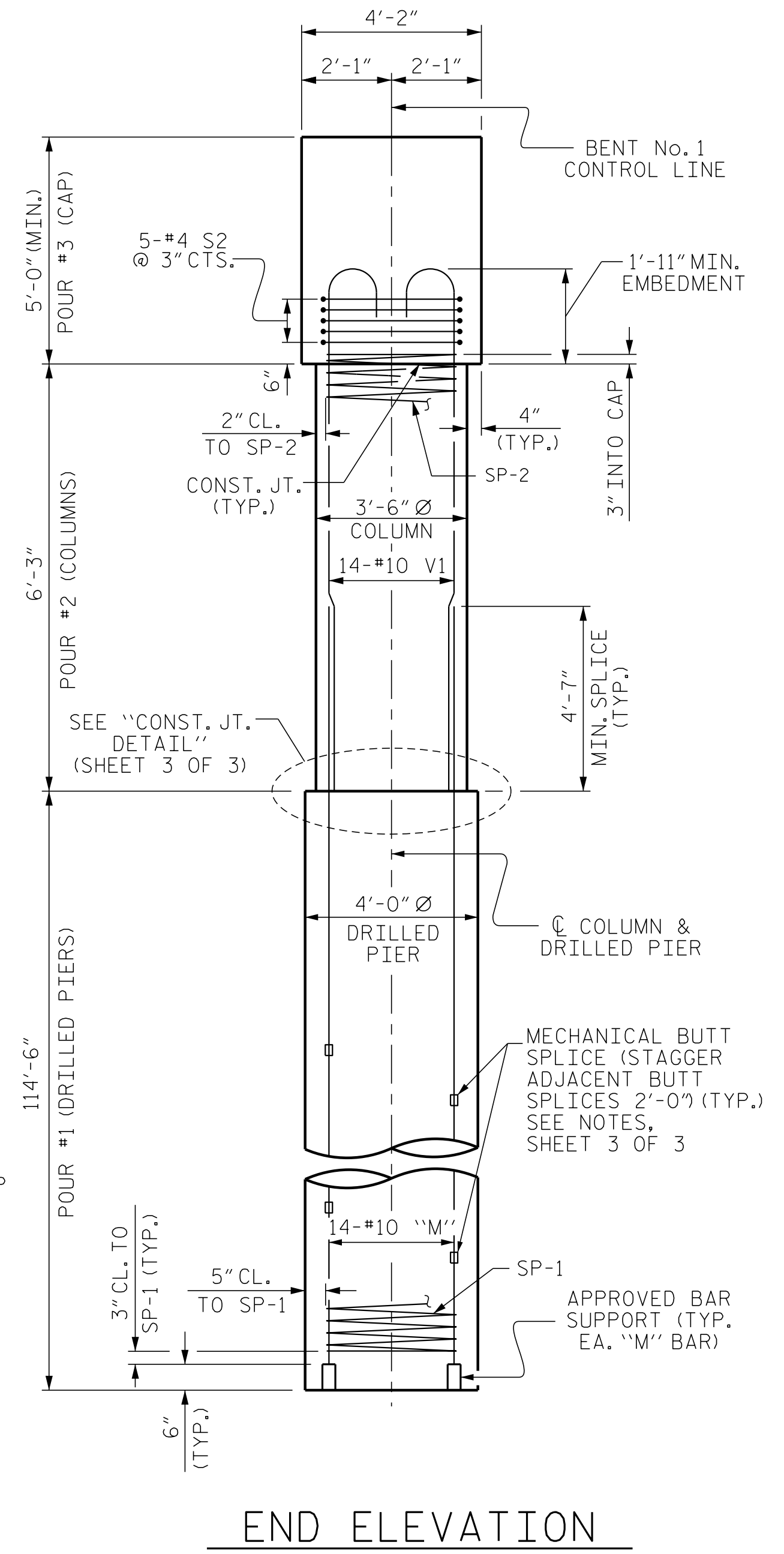


PLAN



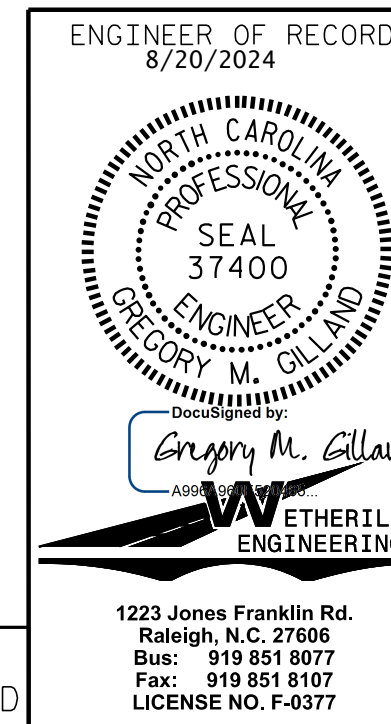
ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER.
FOR PLACEMENT OF "M" AND V1 BARS, SEE SHEET 2 OF 3.



END ELEVATION

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-
SHEET 1 OF 3

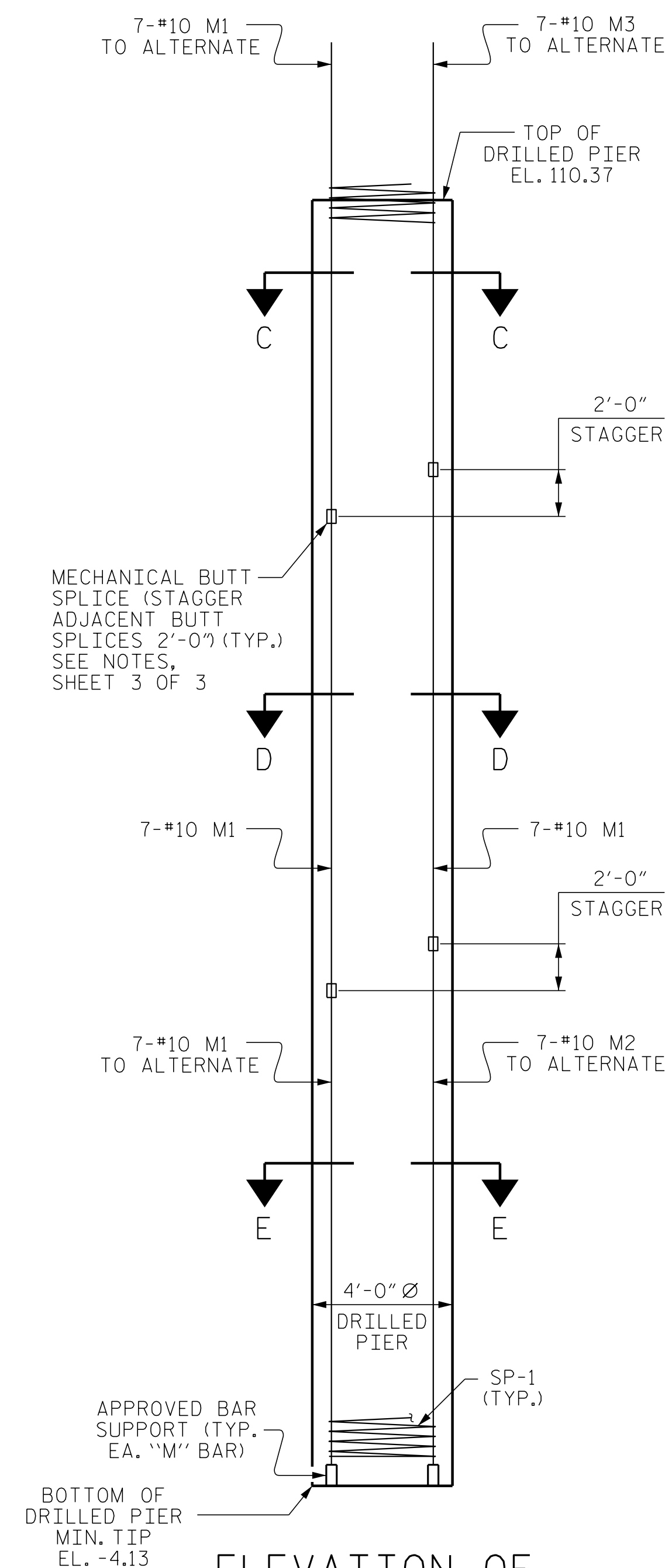


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-50
2			4			
TOTAL SHEETS						64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



REINFORCING STEEL AND DIMENSIONS ARE TYPICAL
FOR DRILLED PIERS AND COLUMNS EXCEPT AS NOTED.



SHEET 2 OF 3



REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR DRILLED PIERS.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024



Designed for
Gregory M. Gilland
1998 **ETHERILL**
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27608
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT No. 1

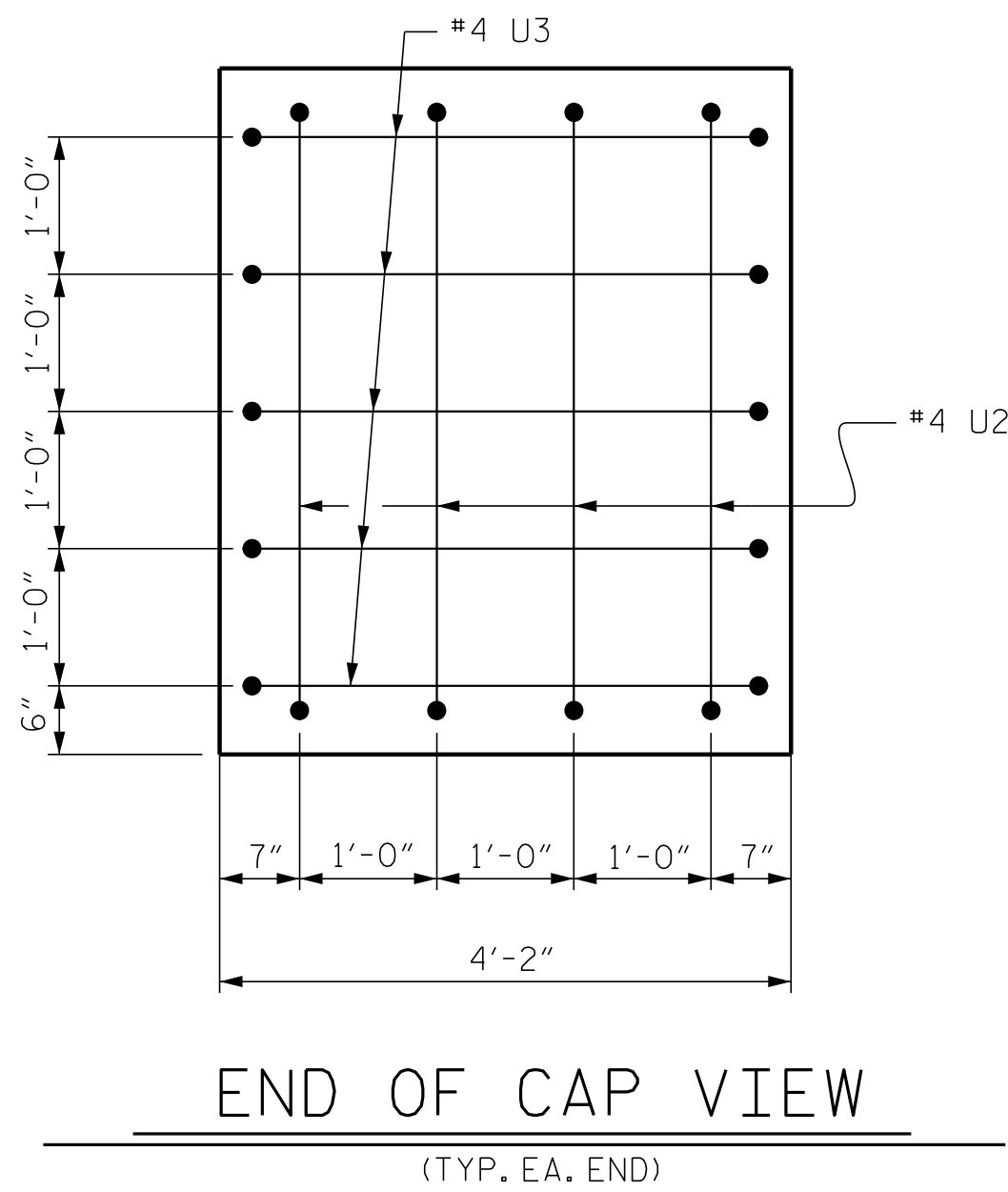
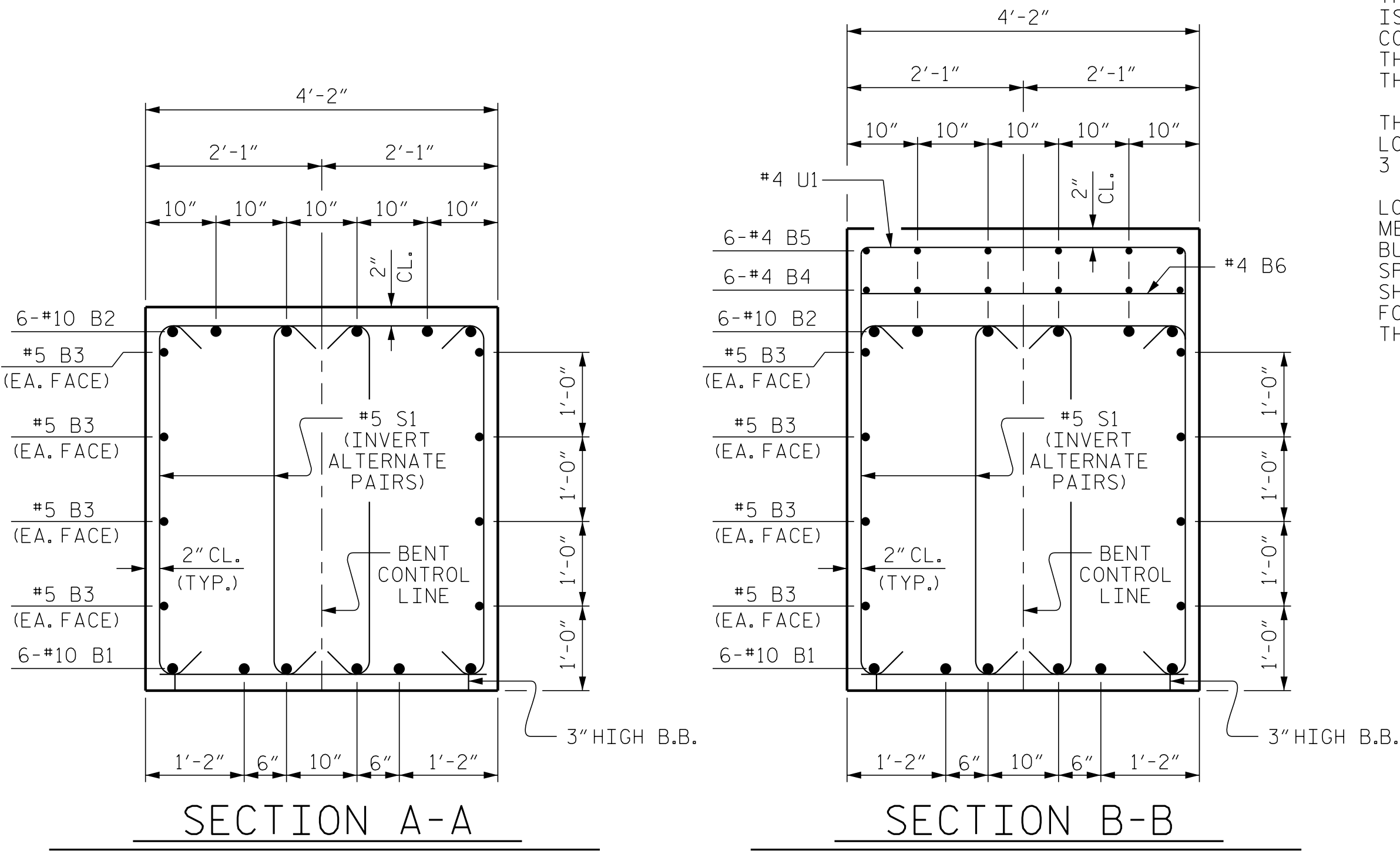
SHEET NO.
S-51

TOTAL SHEETS
64

REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2						

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN402_001_B-5985-SITE 2 770175_SKU_LBT.dgn 4/26/2024 9:25:58 AM

DRAWN BY : D. HODGE DATE : 5/22
CHECKED BY : G. GILLAND DATE : 5/22



NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

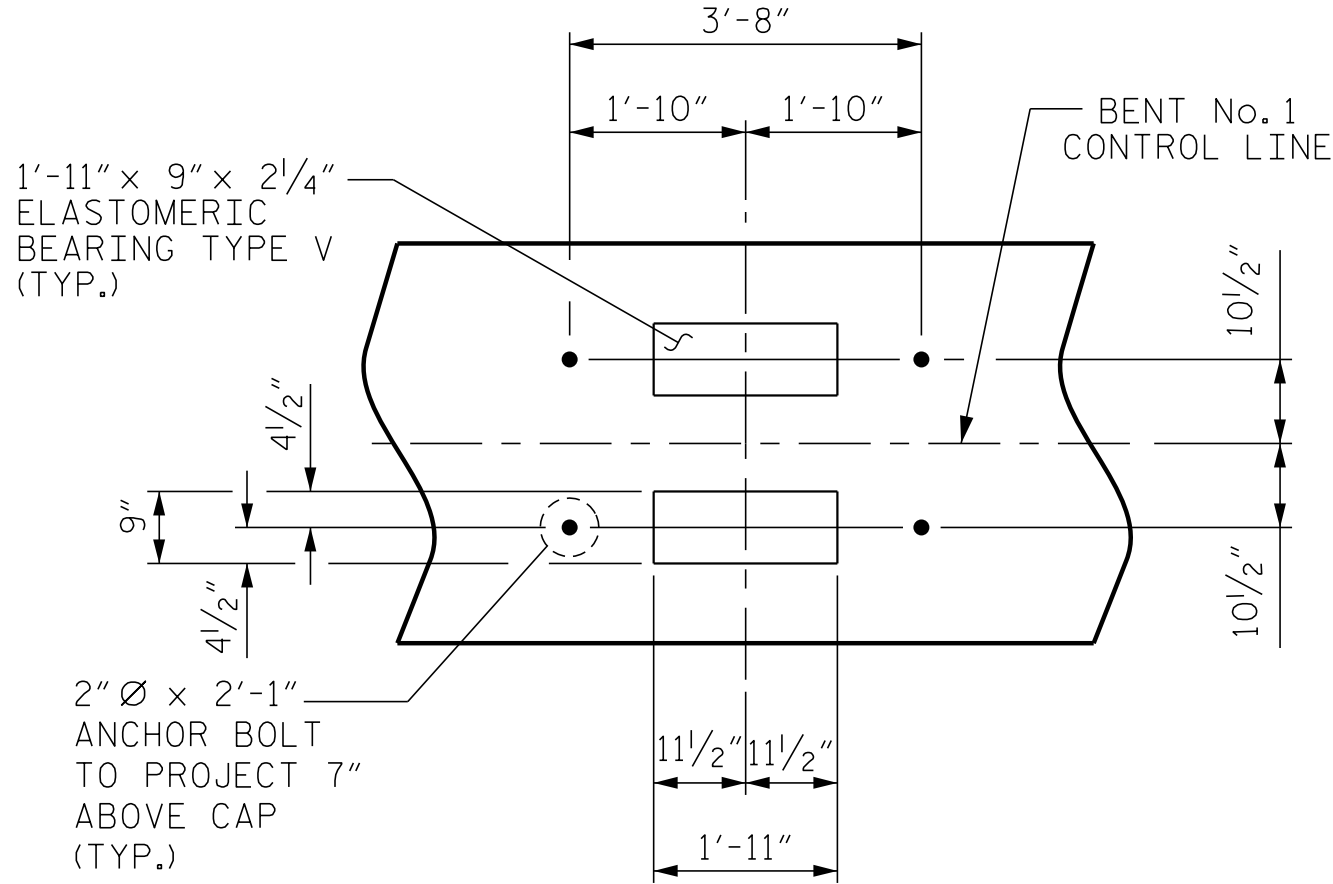
HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

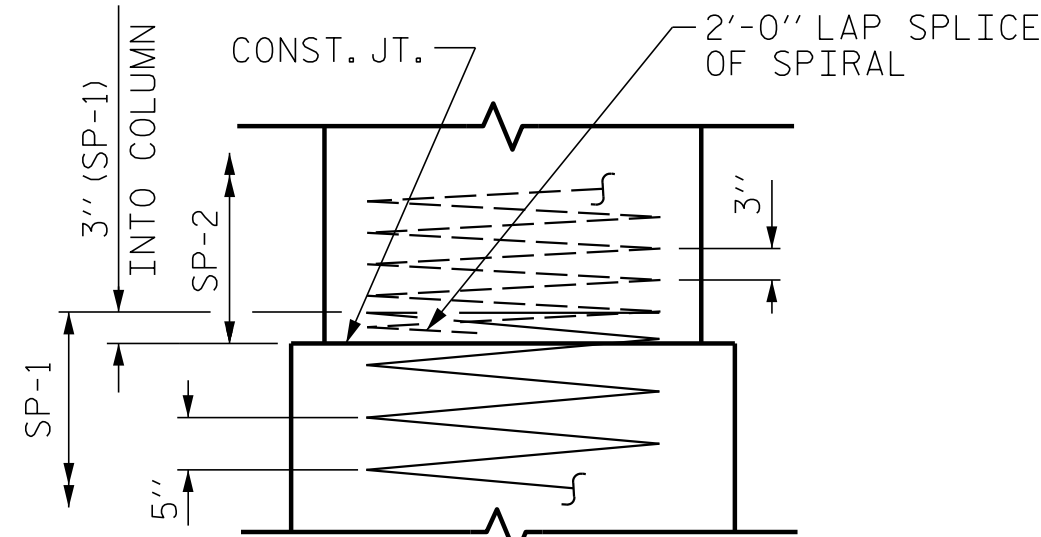
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

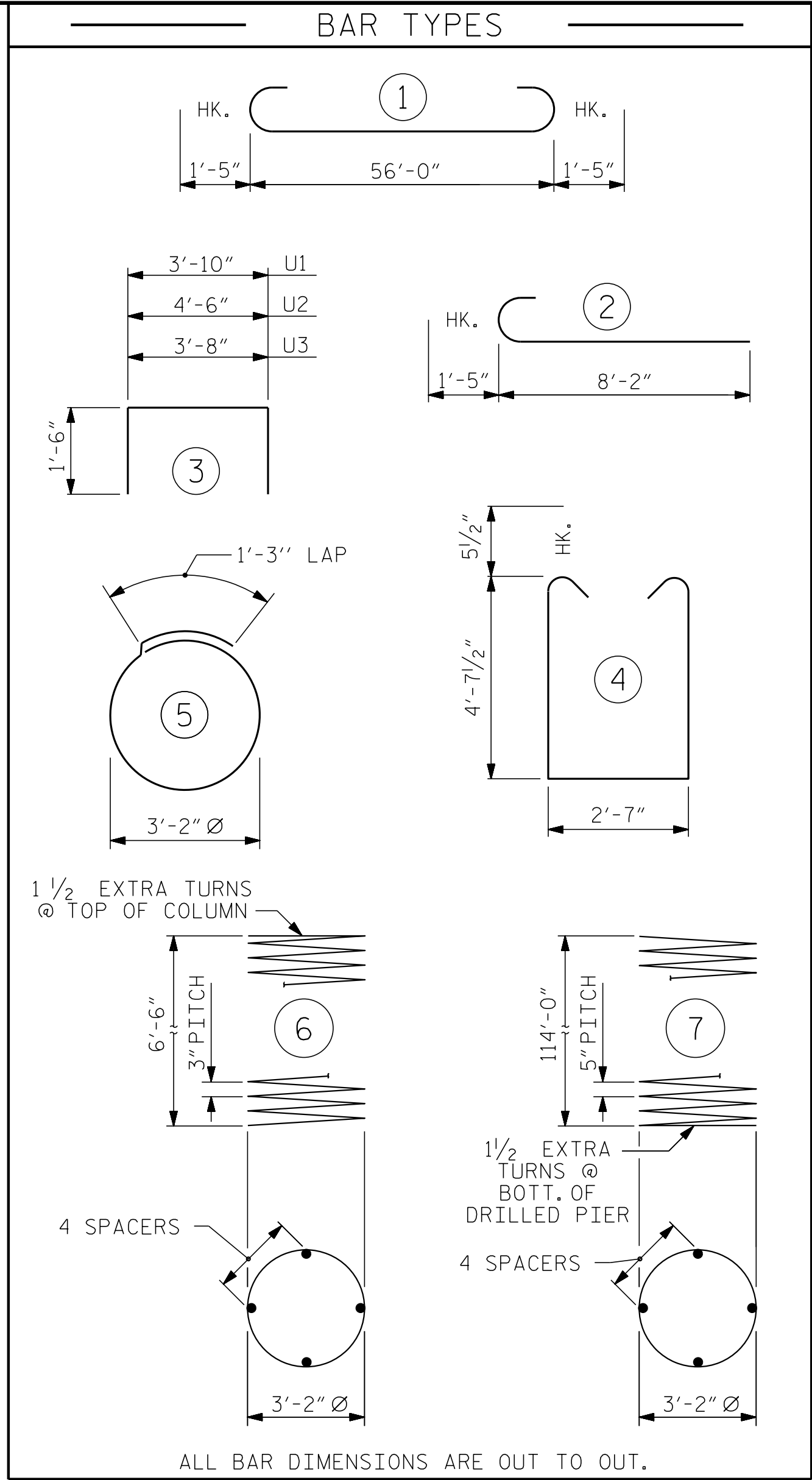
LONGITUDINAL COLUMN REINFORCING STEEL SHALL BE SPLICED USING MECHANICAL BUTT SPLICES, NO LAP SPLICES ALLOWED. MECHANICAL BUTT SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SUBMITTED FOR APPROVAL. ADJACENT SPLICES SHALL BE STAGGERED AT 2'-0". NO EXTRA PAYMENT WILL BE MADE FOR USING MECHANICAL BUTT SPLICES OR MODIFYING BAR LENGTHS. THE COST WILL BE INCIDENTAL TO REINFORCING STEEL.



DETAIL "A"
(TYP. EACH GIRDER)



CONSTRUCTION JOINT DETAIL



** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	56'-2"	1,450
B2	6	#10	1	58'-10"	1,519
B3	8	#5	STR	56'-2"	469
B4	6	#4	STR	34'-4"	138
B5	6	#4	STR	5'-0"	20
B6	5	#4	STR	3'-10"	13

M1	112	#10	STR	40'-7"	19,559
M2	28	#10	STR	42'-7"	5,131
M3	28	#10	STR	38'-7"	4,649

S1	122	#5	4	12'-9"	1,622
S2	20	#4	5	11'-3"	150

U1	80	#4	3	6'-10"	365
U2	8	#4	3	7'-6"	40
U3	10	#4	3	6'-8"	45

V1	56	#10	2	9'-7"	2,309
----	----	-----	---	-------	-------

REINFORCING STEEL 37,479 LBS.

SP-1	4	**	7	2,695'-9"	11,247
SP-2	4	**	6	269'-3"	1,123

SPIRAL COLUMN REINFORCING STEEL 12,370 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #2 COLUMNS 8.9 C.Y.

POUR #3 CAP 46.5 C.Y.

TOTAL CLASS A CONCRETE 55.4 C.Y.

DRILLED PIERS:

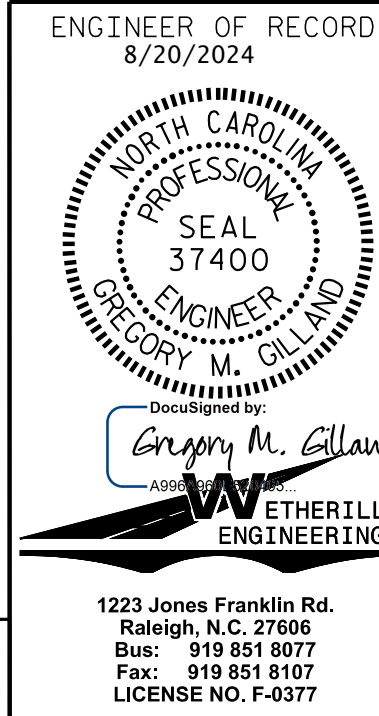
DRILLED PIER CONCRETE
POUR #1 (DRILLED PIERS) 213.2 C.Y.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

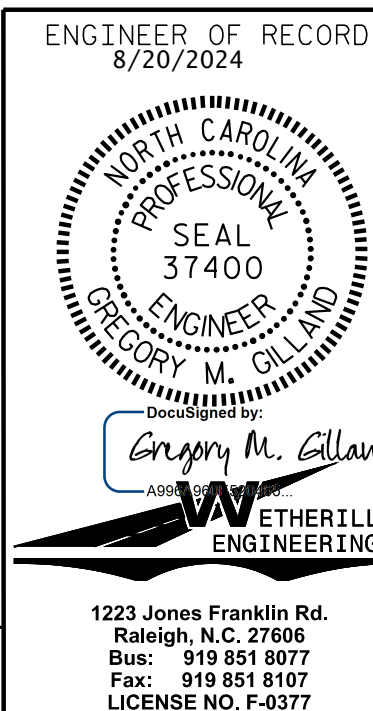
SUBSTRUCTURE

BENT No. 1

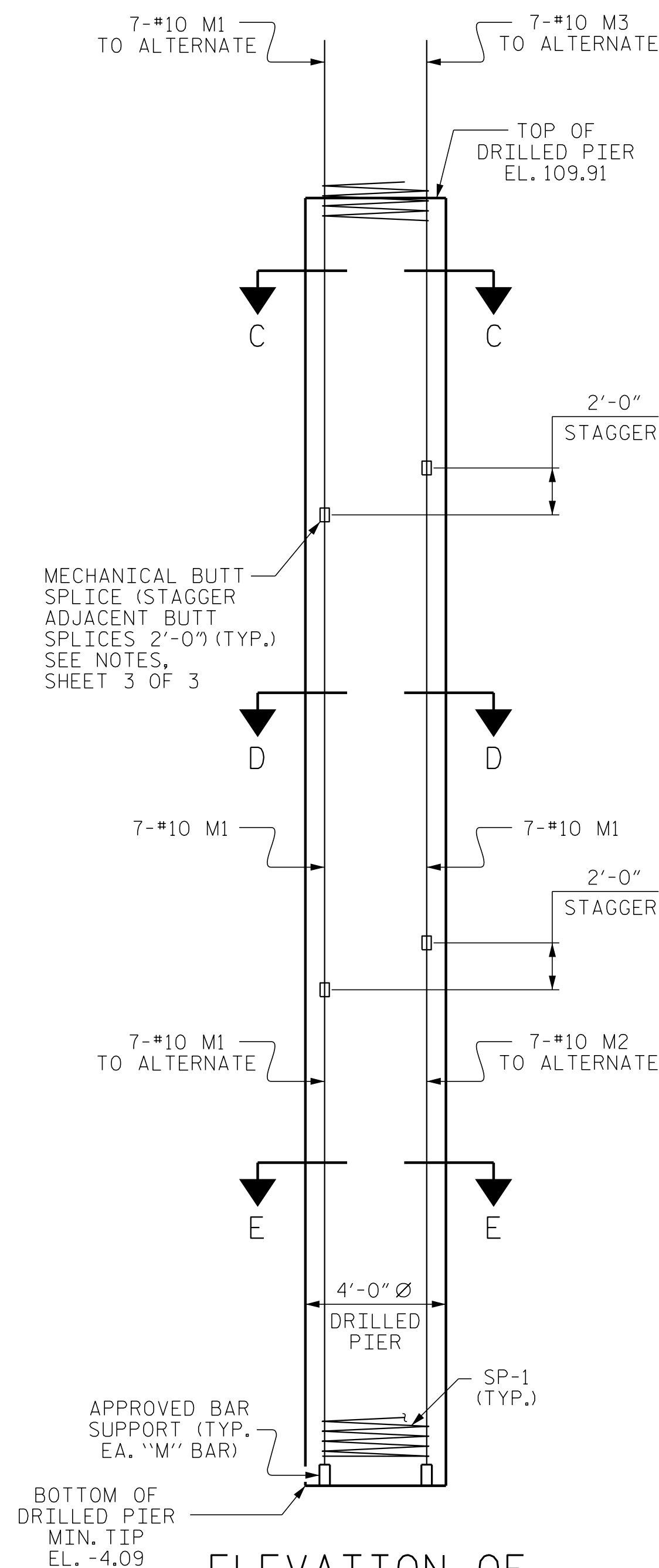
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-52
2			4			TOTAL SHEETS 64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



STATE OF NORTH CAROLINA							
DEPARTMENT OF TRANSPORTATION							
RALEIGH							
SUBSTRUCTURE							
BENT No. 2							
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53	
1			3			TOTAL	
2			4			SHEETS	
						64	

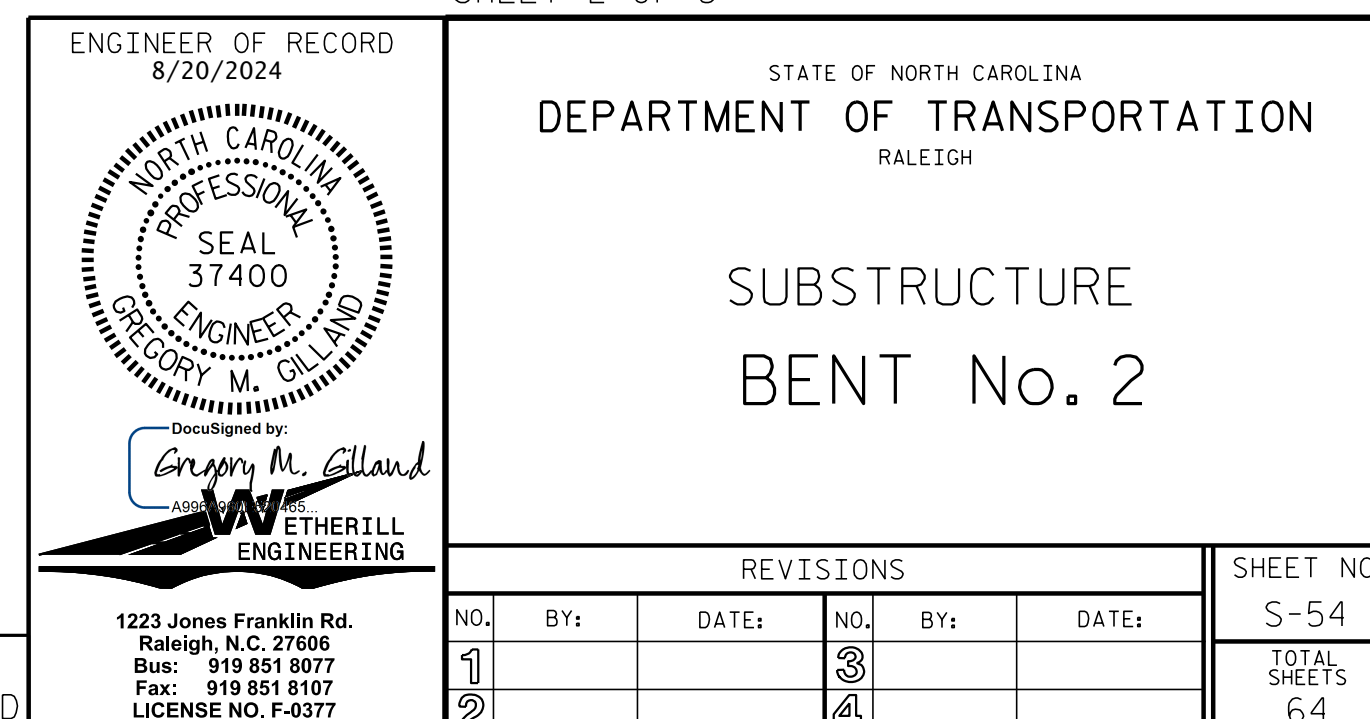


SPAN E

ELEVATION OF
DRILLED PIER

ROBESON COUNTY

SHEET 2 OF 3



SECTION E-E

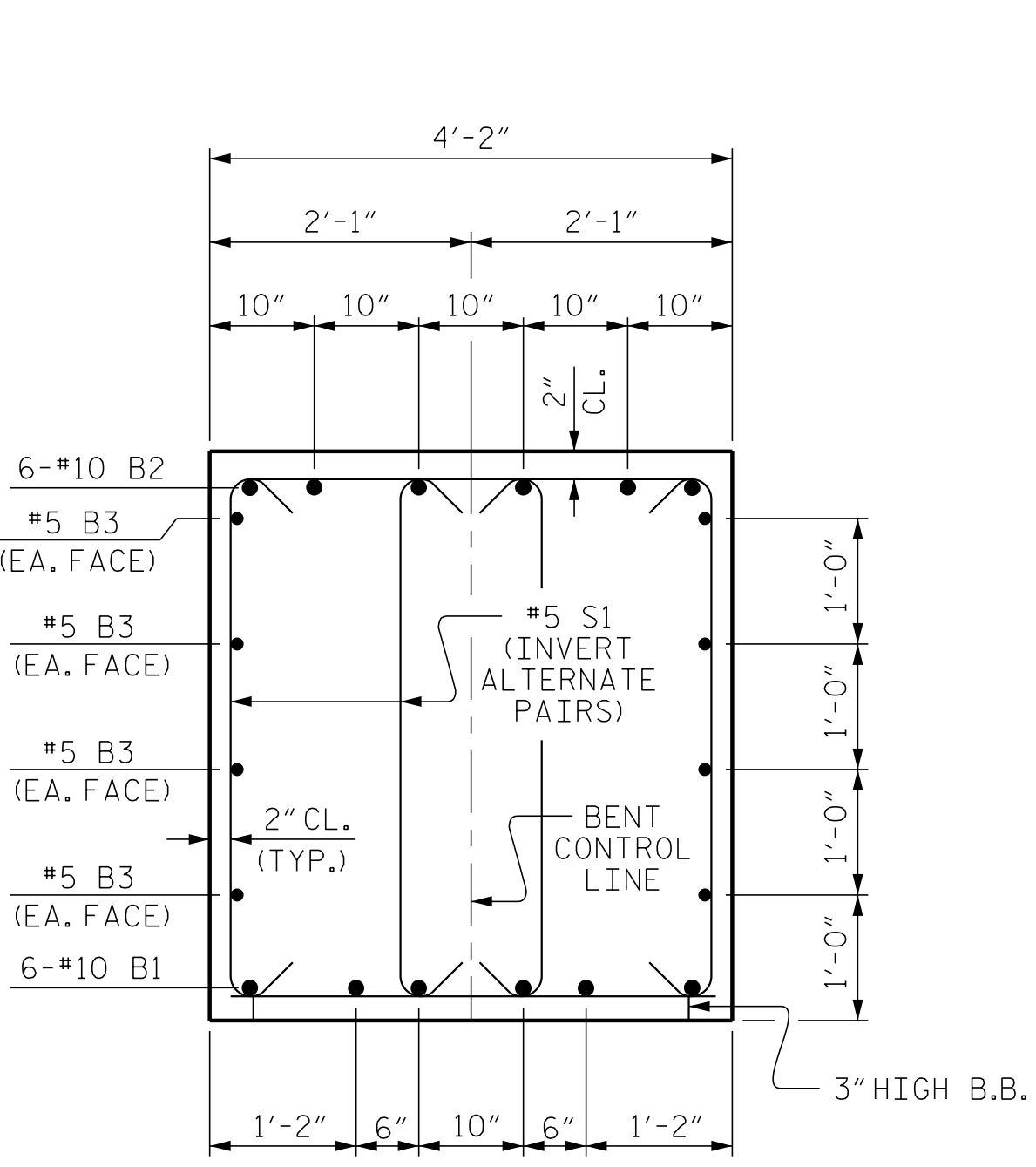
REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR DRILLED PIERS.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

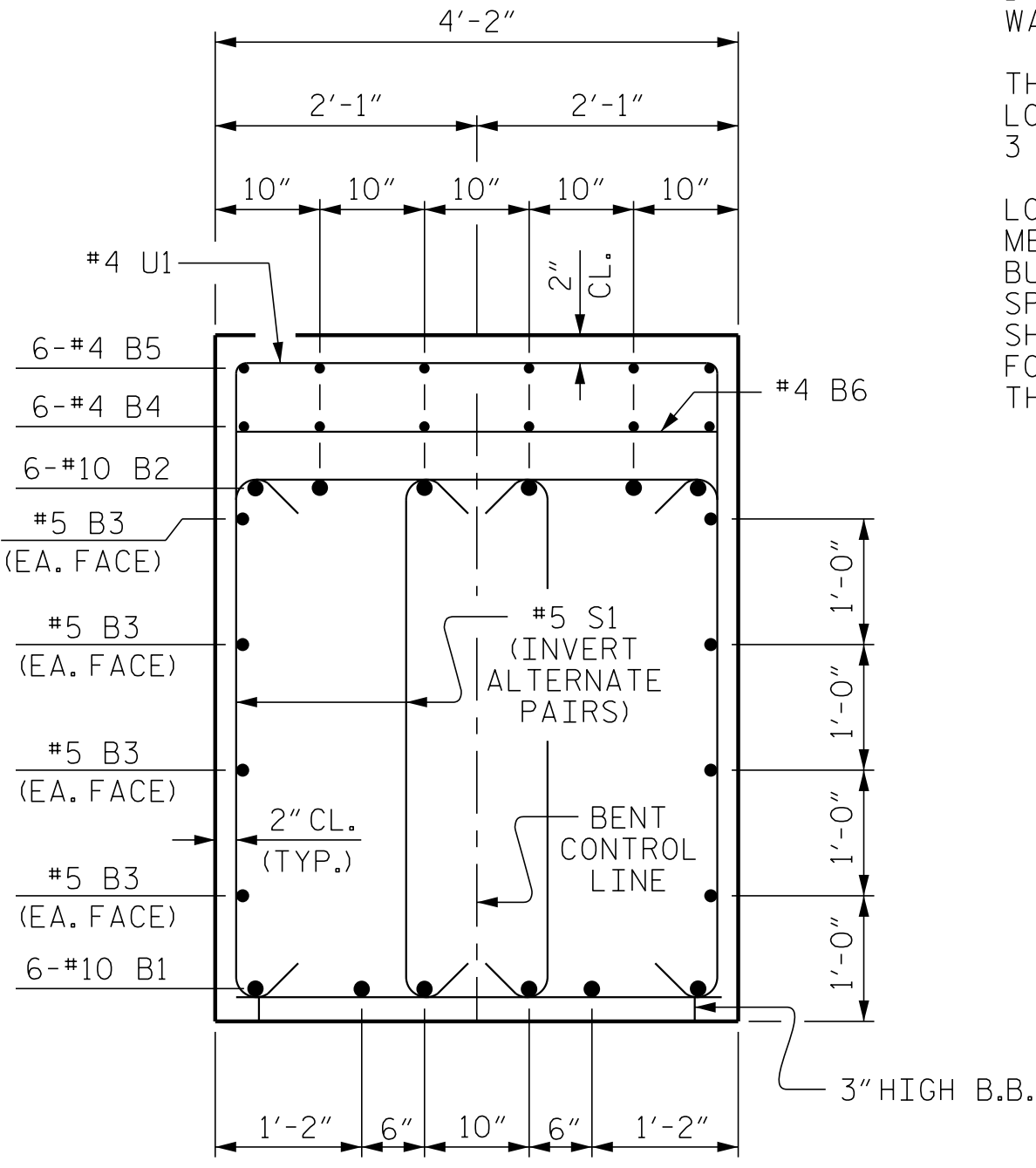
REVISIONS						SHEET NO. S-54
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_BT.dgn 4/26/2024 9:44:38 AM

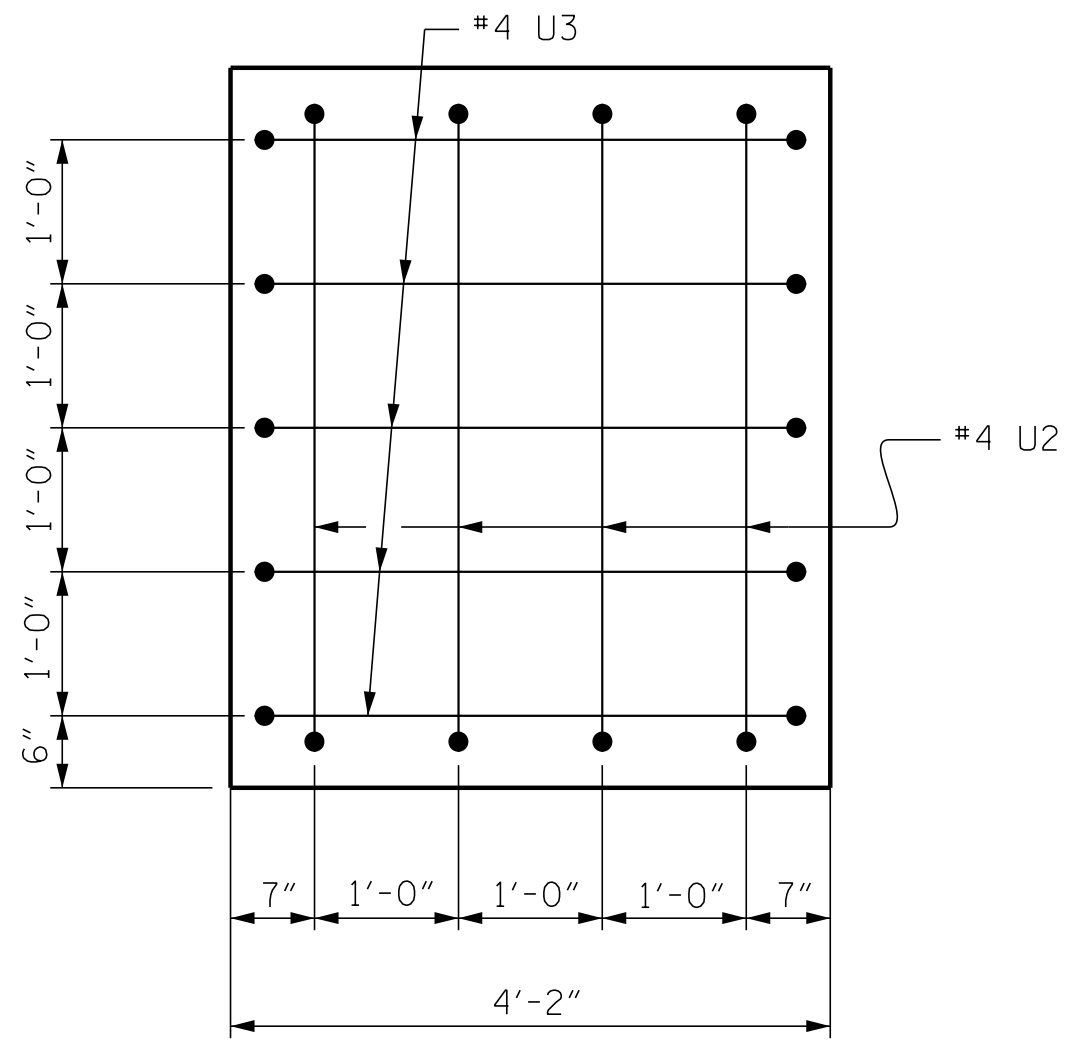
DRAWN BY : D. HODGE DATE : 5/22
CHECKED BY : G. GILLAND DATE : 6/22



SECTION A-A



SECTION B-B



END OF CAP VIEW

(TYP. EA. END)

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

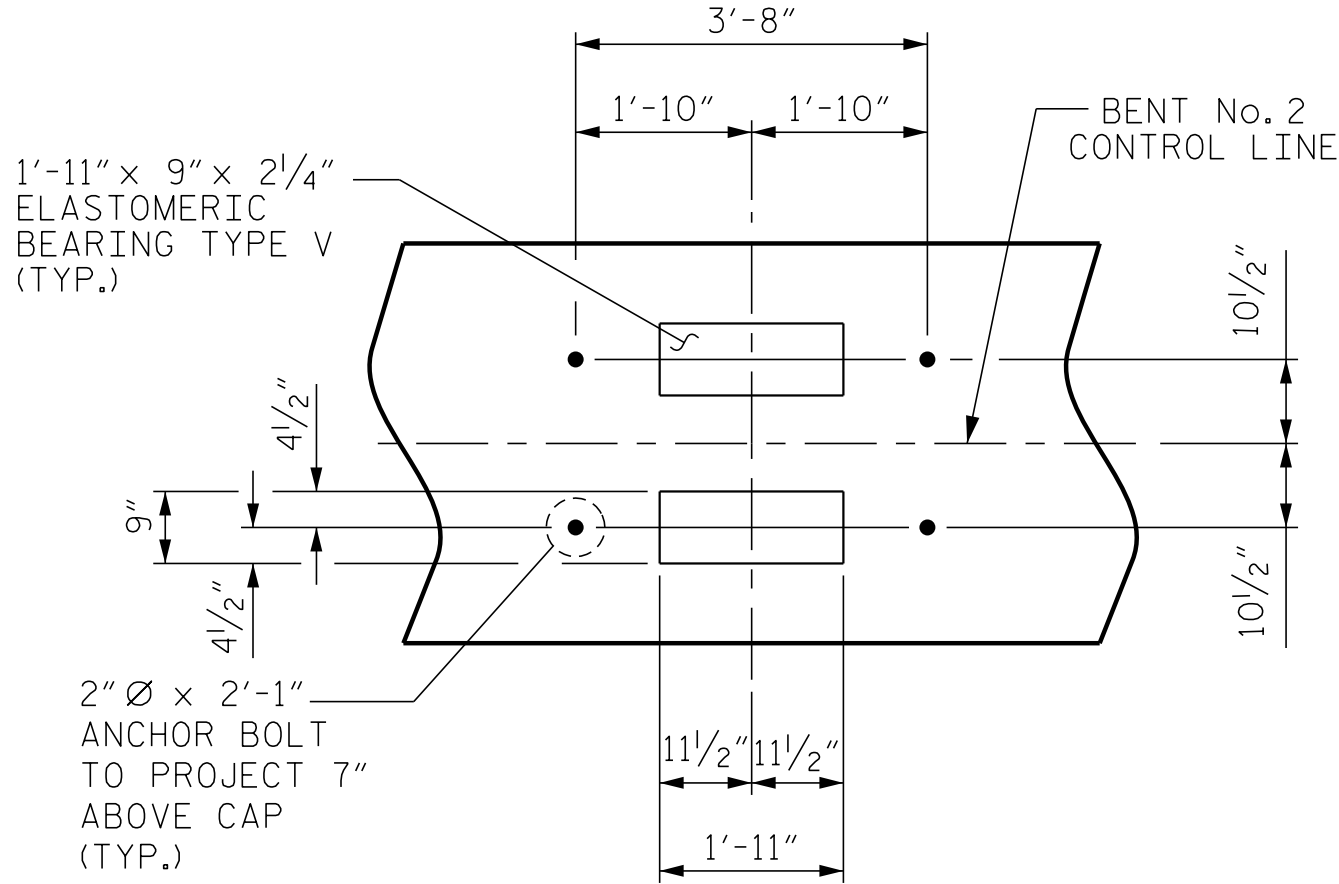
HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.

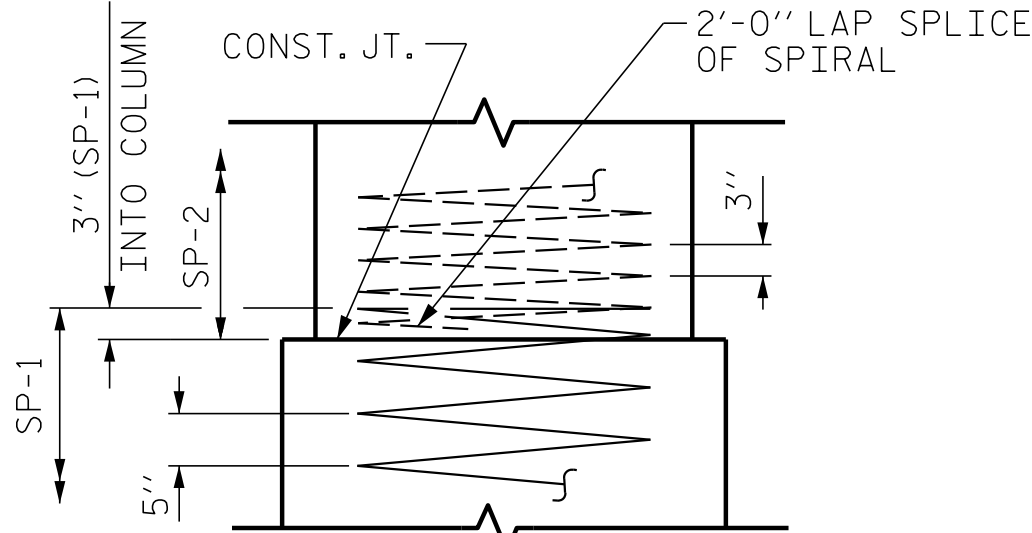
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

LONGITUDINAL COLUMN REINFORCING STEEL SHALL BE SPLICED USING MECHANICAL BUTT SPLICES. NO LAP SPLICES ALLOWED. MECHANICAL BUTT SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND SUBMITTED FOR APPROVAL. ADJACENT SPLICES SHALL BE STAGGERED AT 2'-0". NO EXTRA PAYMENT WILL BE MADE FOR USING MECHANICAL BUTT SPLICES OR MODIFYING BAR LENGTHS. THE COST WILL BE INCIDENTAL TO REINFORCING STEEL.

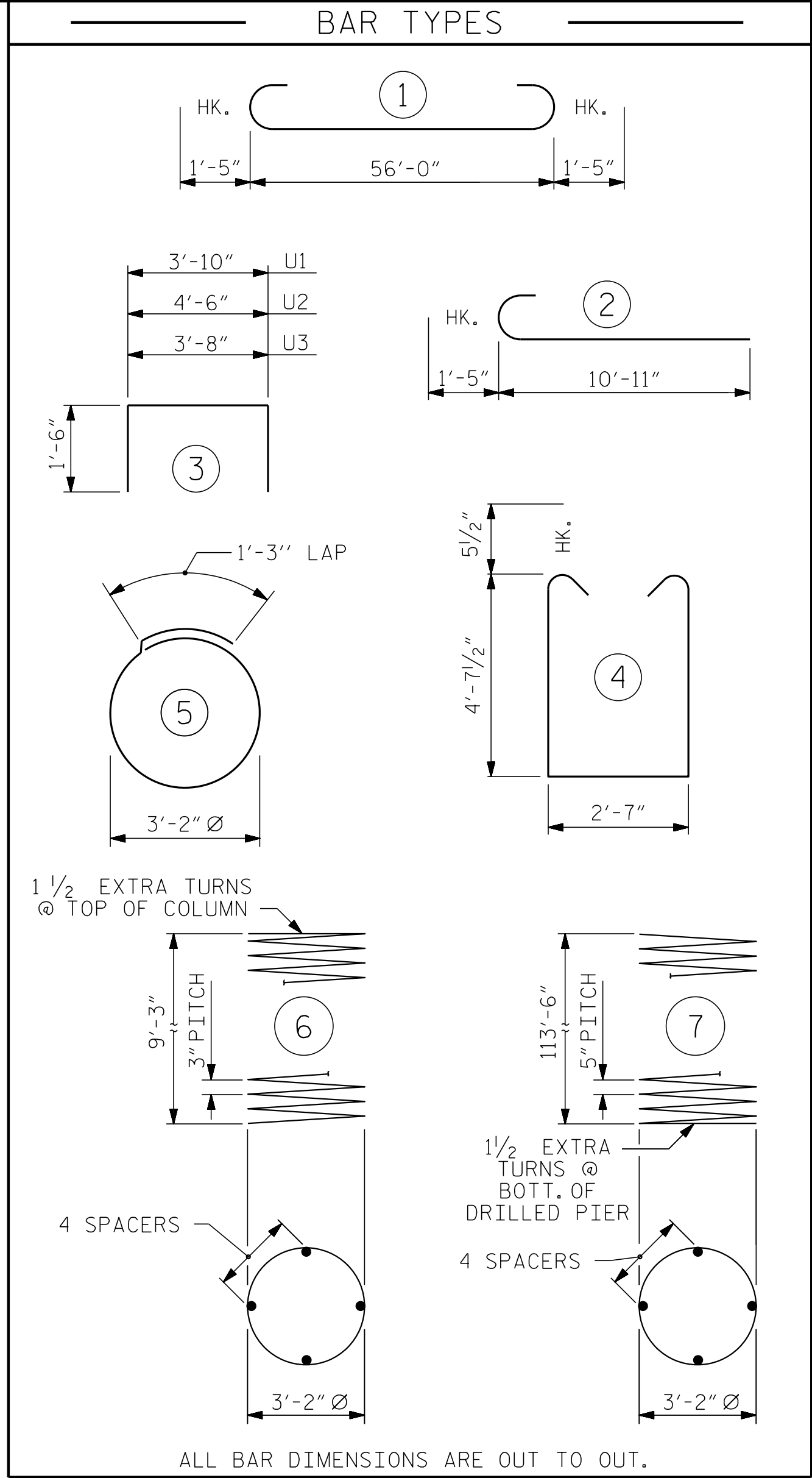


DETAIL "A"

(TYP. EACH GIRDER)



CONSTRUCTION JOINT DETAIL



** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

BILL OF MATERIAL

BENT No. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	56'-2"	1,450
B2	6	#10	1	58'-10"	1,519
B3	8	#5	STR	56'-2"	469
B4	6	#4	STR	34'-4"	138
B5	6	#4	STR	5'-0"	20
B6	5	#4	STR	3'-10"	13

M1	112	#10	STR	40'-5"	19,478
M2	28	#10	STR	42'-5"	5,111
M3	28	#10	STR	38'-5"	4,629

S1	122	#5	4	12'-9"	1,622
S2	20	#4	5	11'-3"	150

U1	80	#4	3	6'-10"	365
U2	8	#4	3	7'-6"	40
U3	10	#4	3	6'-8"	45

V1	56	#10	2	12'-4"	2,972
----	----	-----	---	--------	-------

REINFORCING STEEL	38,021	LBS.
-------------------	--------	------

SP-1	4	**	7	2,683'-6"	11,196
SP-2	4	**	6	376'-11"	1,572

SPIRAL COLUMN REINFORCING STEEL	12,768	LBS.
---------------------------------	--------	------

CLASS A CONCRETE BREAKDOWN	
----------------------------	--

POUR #2 COLUMNS	12.8	C.Y.
-----------------	------	------

POUR #3 CAP	46.5	C.Y.
-------------	------	------

TOTAL CLASS A CONCRETE	59.3	C.Y.
------------------------	------	------

DRILLED PIERS:

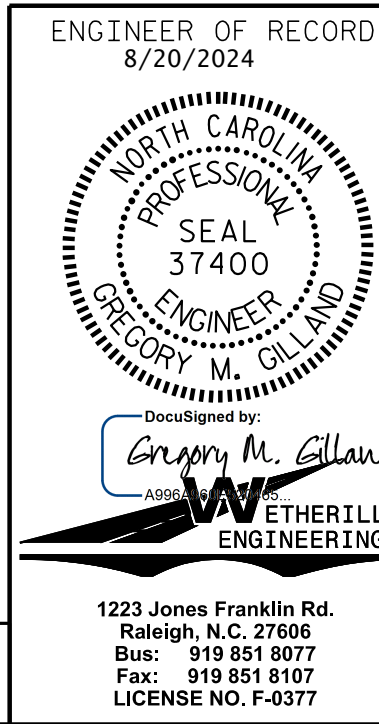
DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	212.2 C.Y.

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

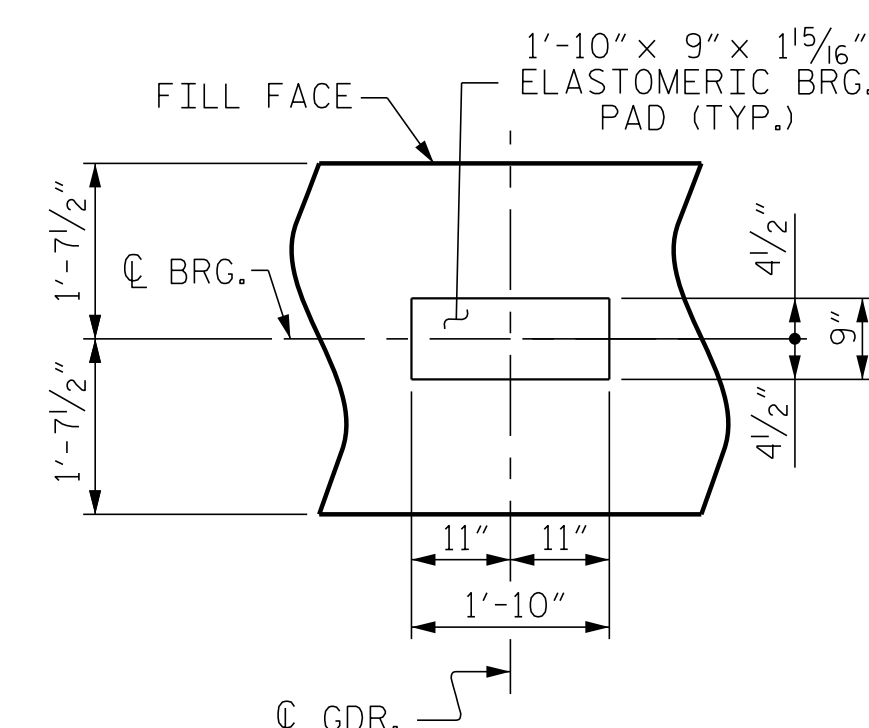
SUBSTRUCTURE

BENT No. 2

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-55
2			4			TOTAL SHEETS 64

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

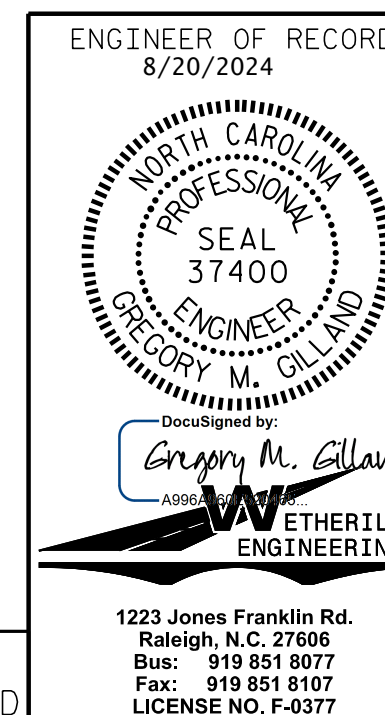


DETAIL "A"

(TYP. EA. BRG. UNDER CONC.
GDR., FOR BRG. UNDER STEEL
BEAMS, SEE DETAIL "B" OR "C",
SHEET 4 OF 4)

PROJECT NO. B-5985B
9 ROBESON COUNTY
 STATION: 22+08.00 -L-

SHEET 1 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

6	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
	1			3			TOTAL SHEETS
	2			4			64

DRAWN BY : D. HODGE DATE : 6/22
CHECKED BY : G. GILLAND DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



ENGINEER OF RECORD
8/20/2024



Decommissioned by

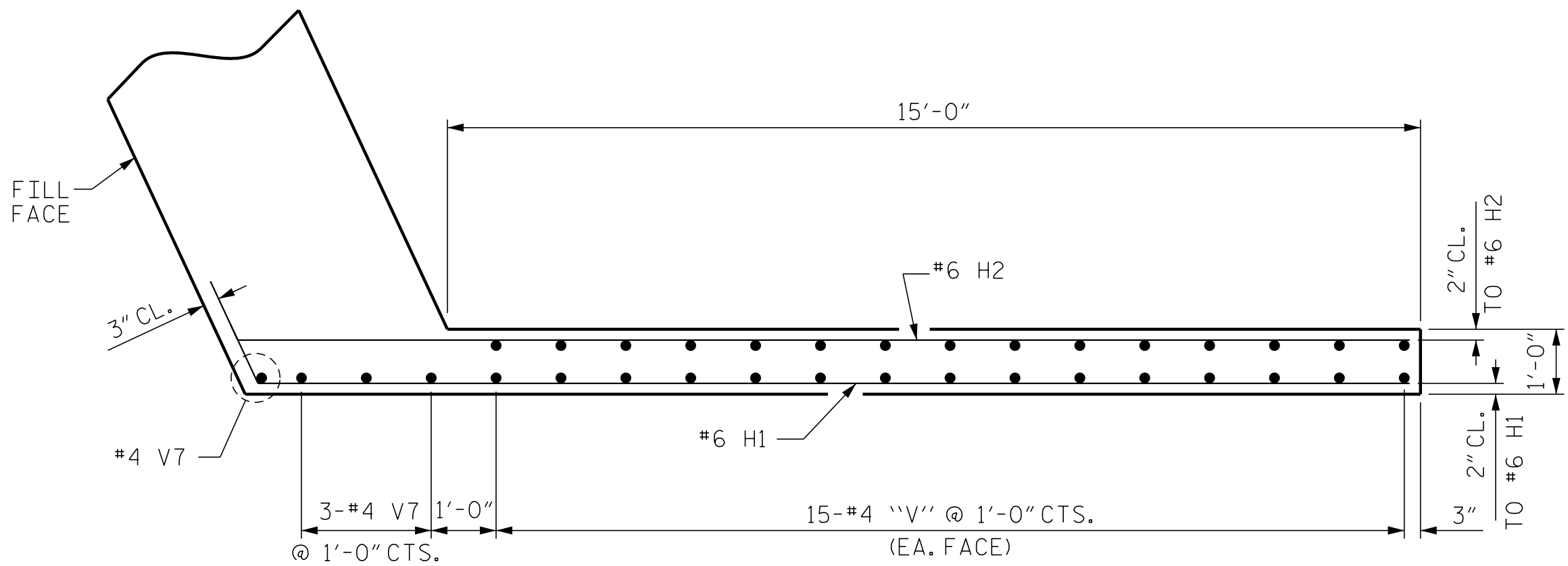
AGGREGATE
 WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

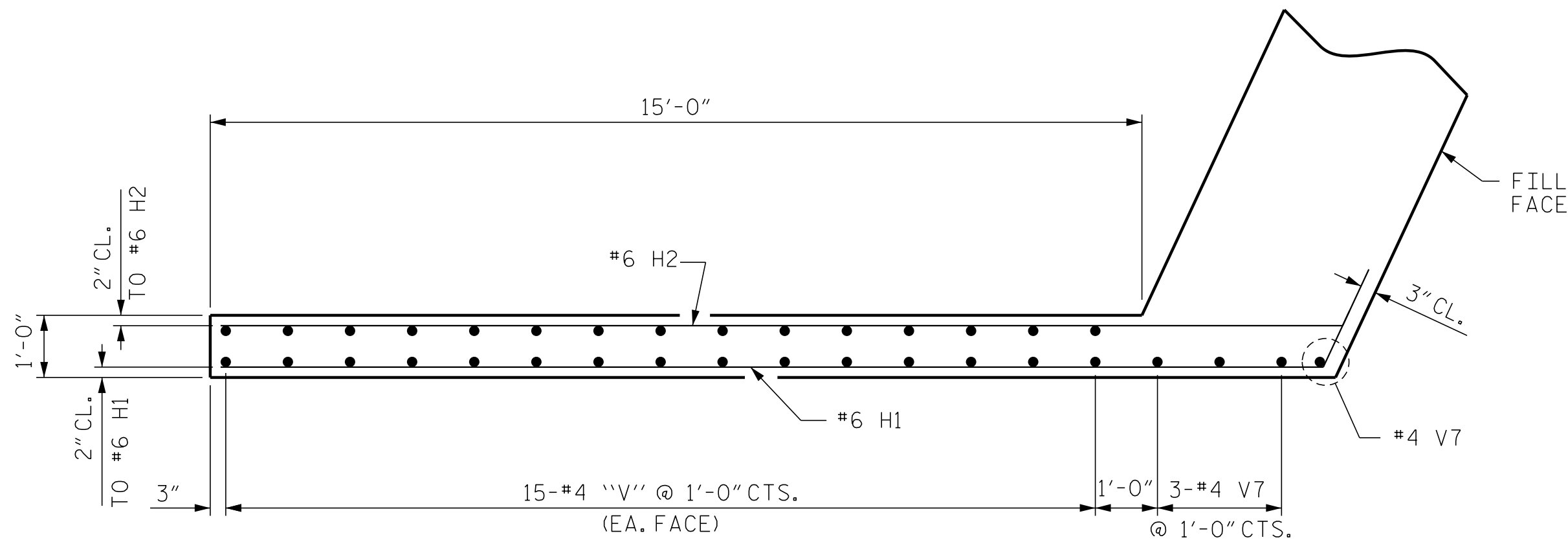
SUBSTRUCTURE
END BENT No. 2

REVISIONS						SHEET NO. S-57
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

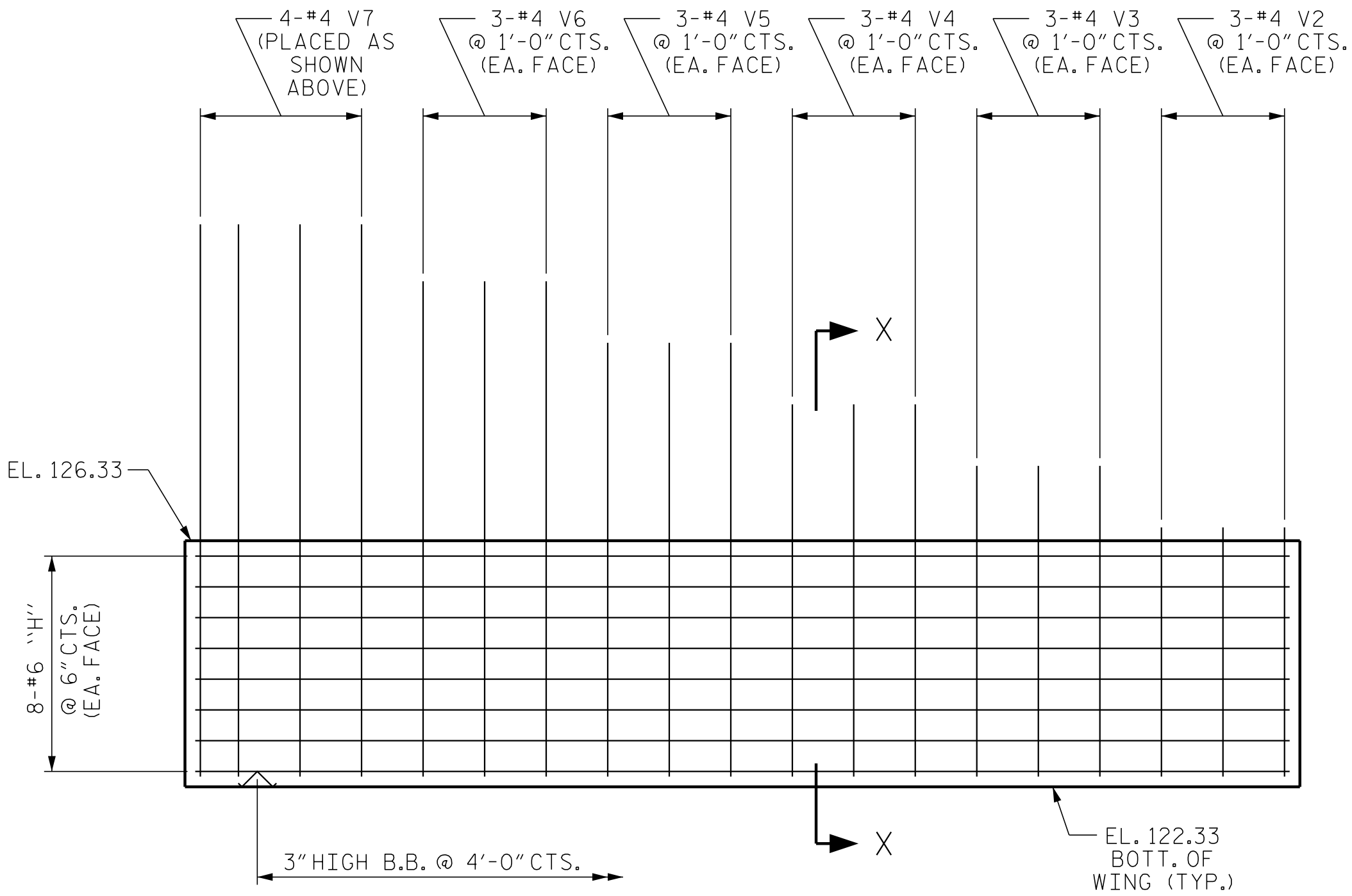
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



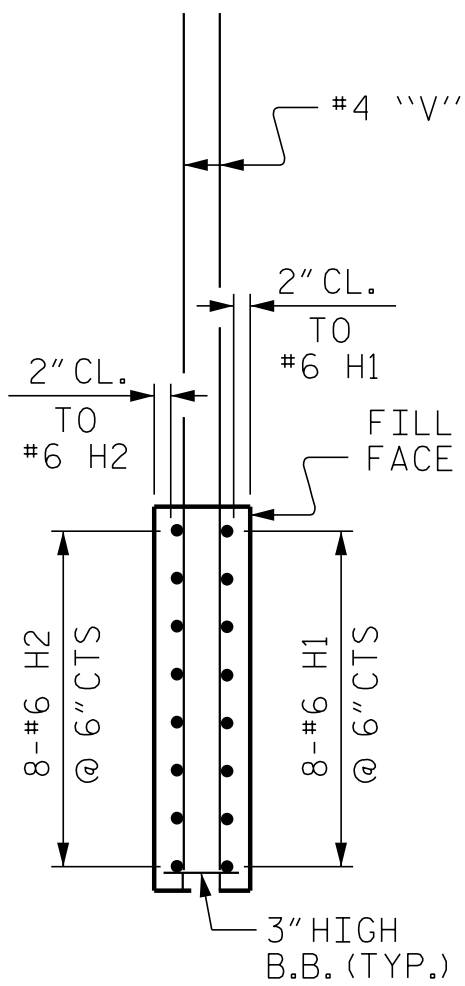
PLAN OF WING (W1)



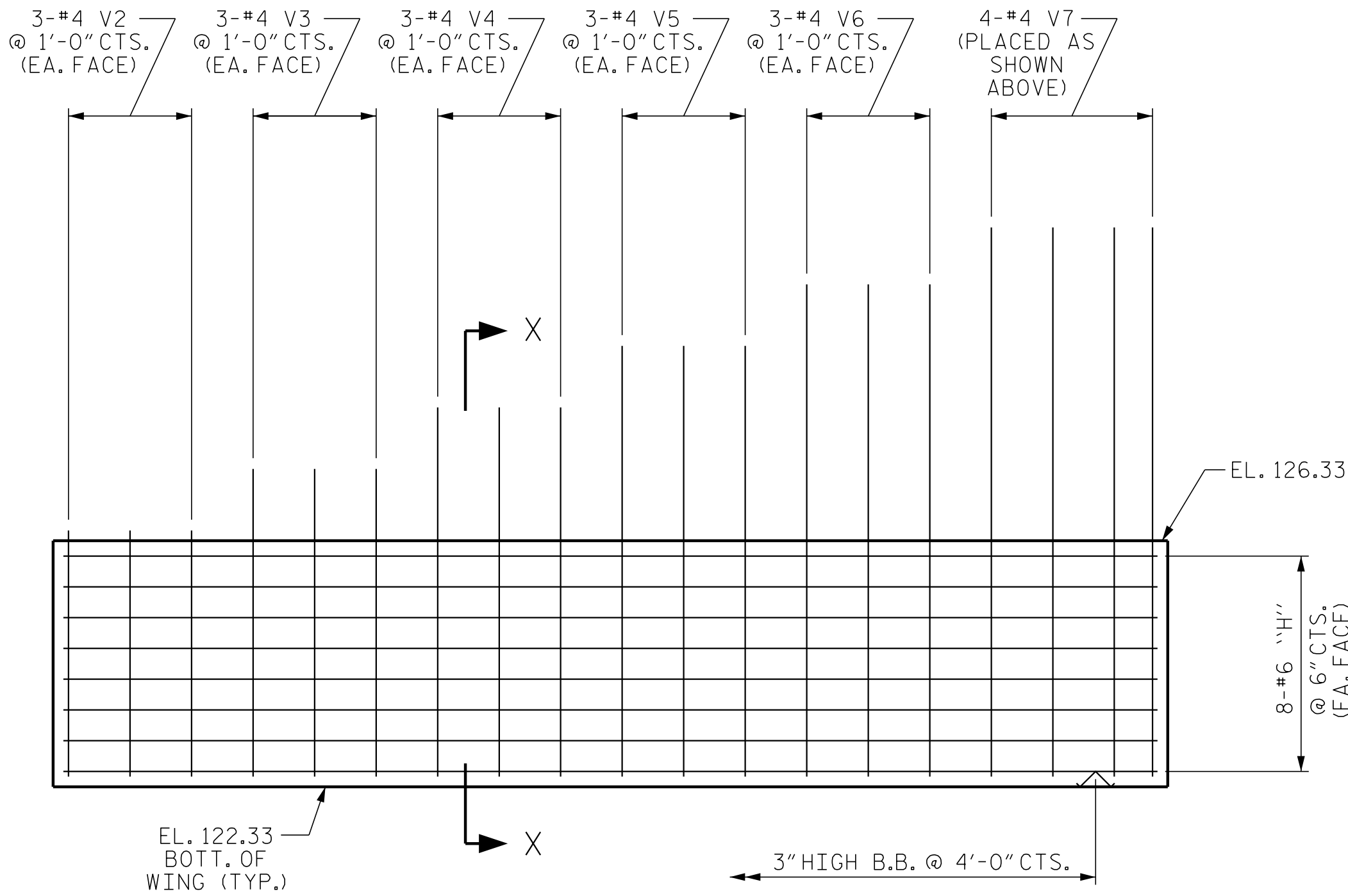
PLAN OF WING (W2)



ELEVATION OF WING (W1)



SECTION X-X



ELEVATION OF WING (W2)

NOTE: THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH SPAN C OF THE SUPERSTRUCTURE. FOR DETAILS AND REINFORCING STEEL, SEE "PLAN OF SPAN C" SUPERSTRUCTURE DETAILS, SHEET 4 OF 4.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 3 OF 4

DRAWN BY : D. HODGE DATE : 7/22
CHECKED BY : G. GILLAND DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

DocuSigned by:

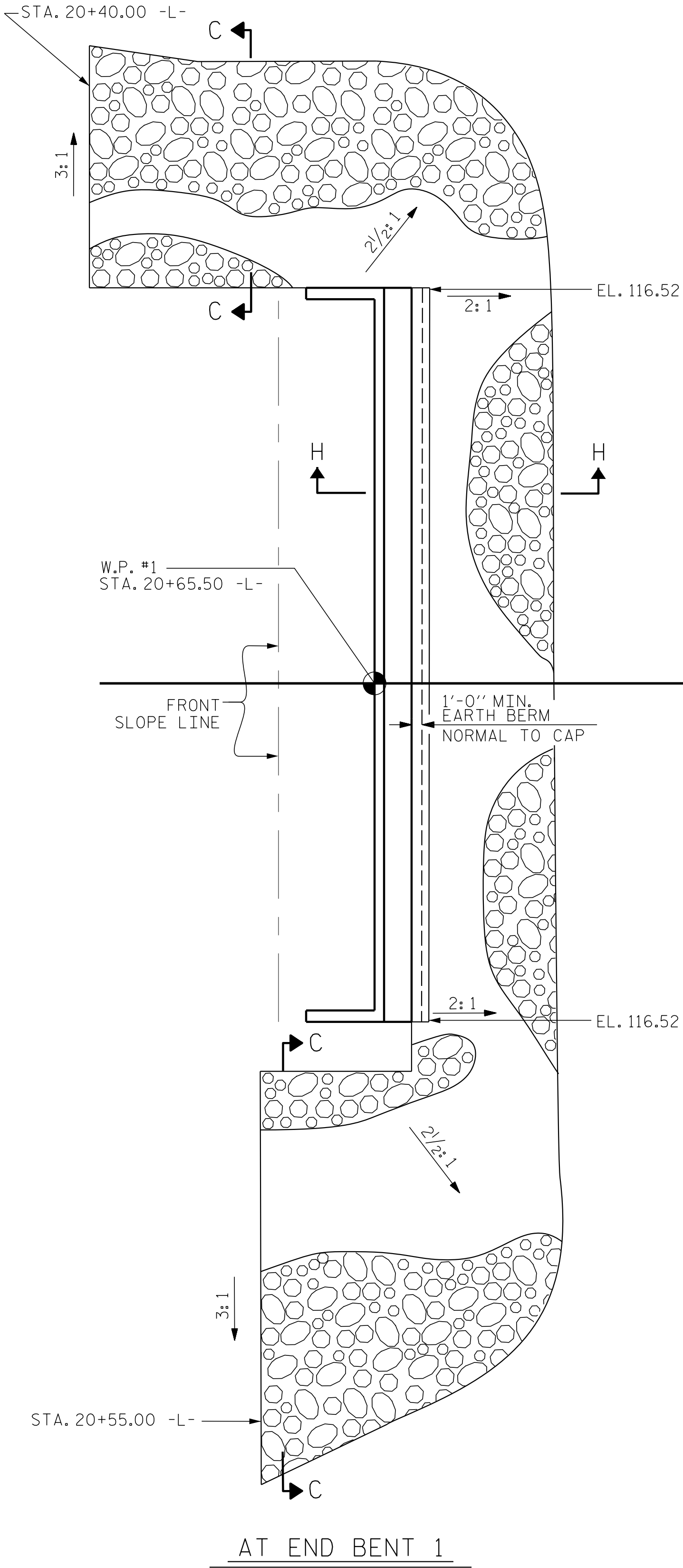
GREGORY M. GILLAND
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2

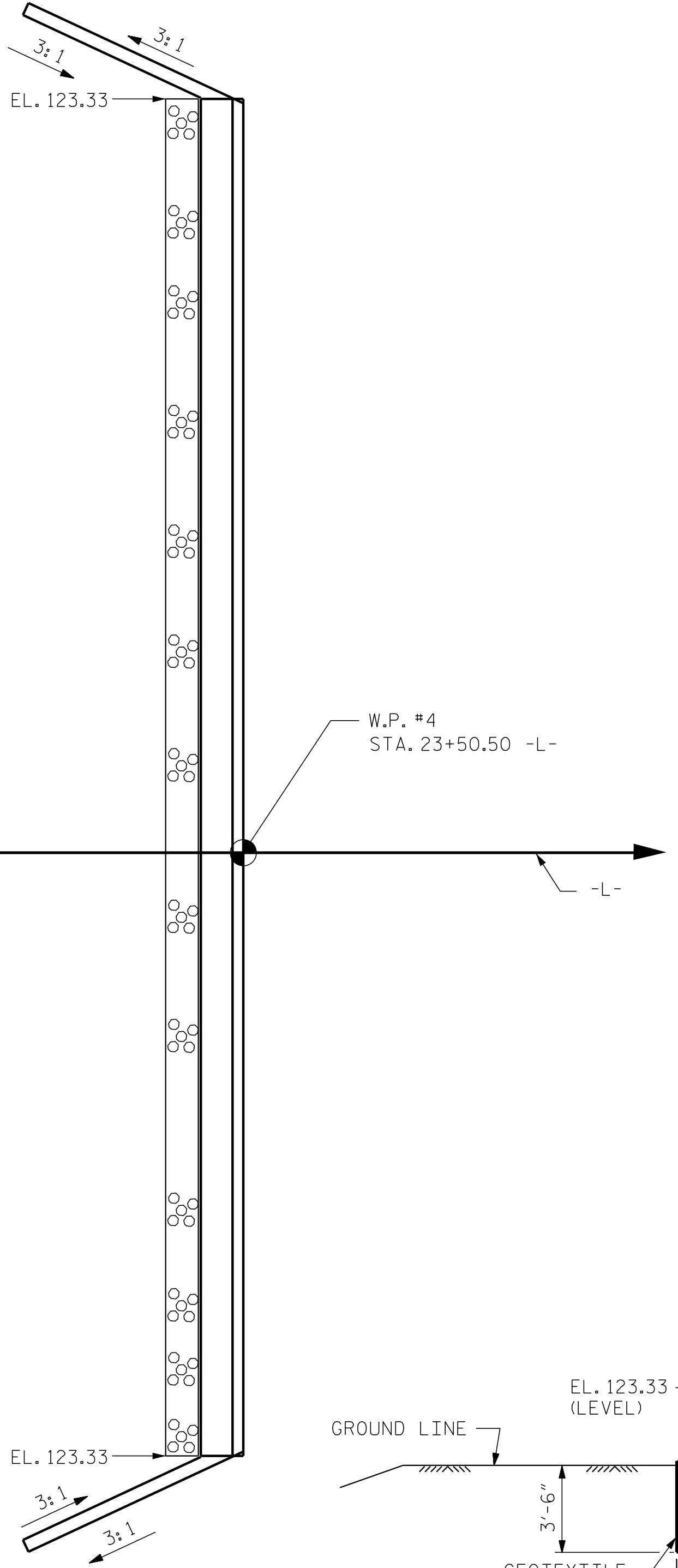
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			64

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402_001_B-5985-SITE 2 770175_SKU_SP.dgn 4/26/2024 9:47:47 AM

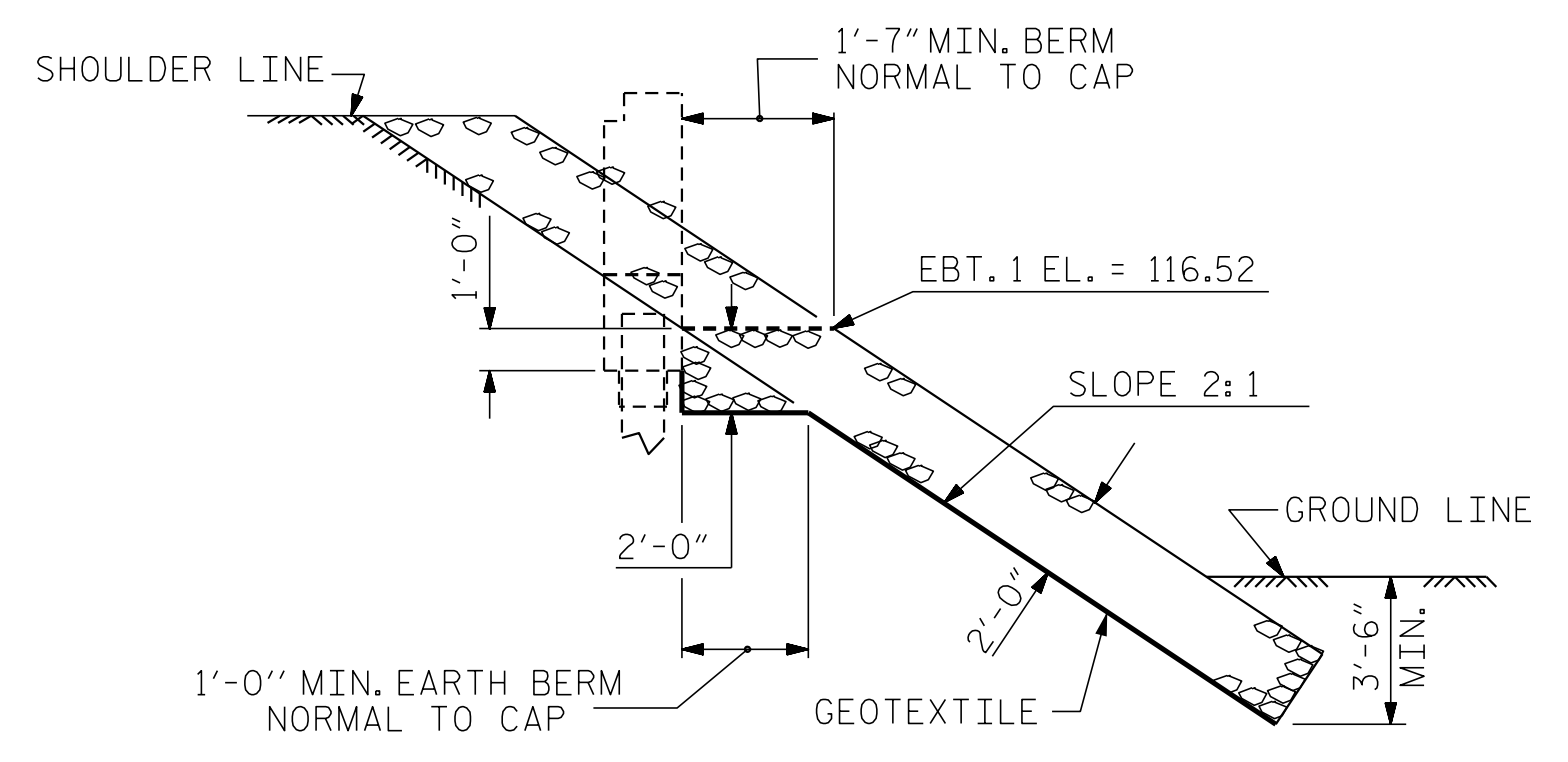


AT END BENT 1

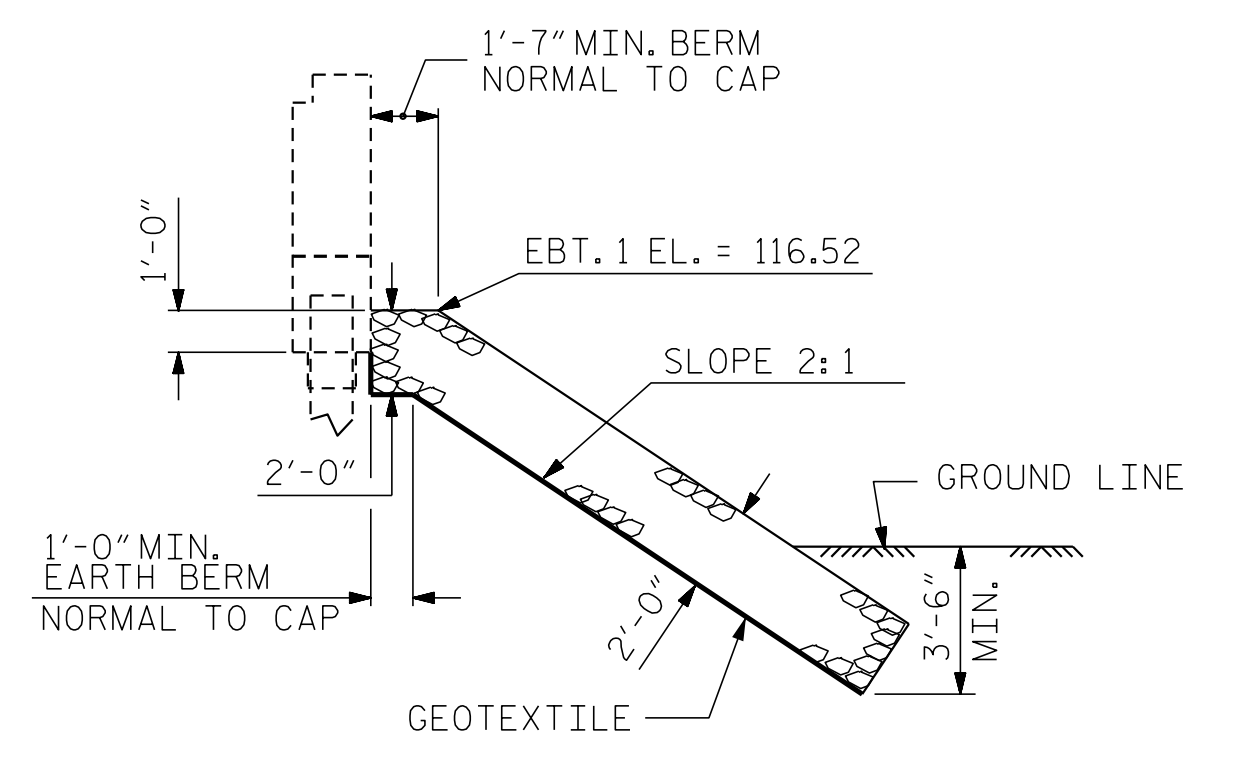
ESTIMATED QUANTITIES		
BRIDGE @ STA. 22+08.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	314	349
END BENT 2	46	105



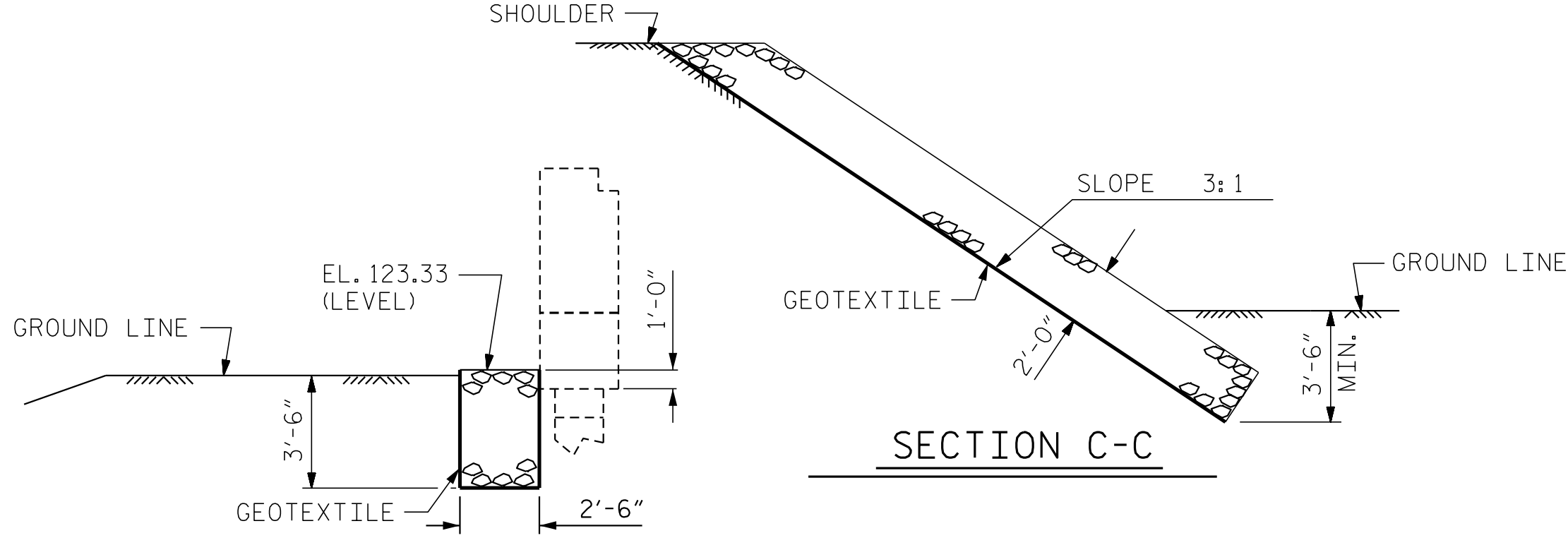
AT END BENT 2
(GRADE TO MAINTAIN A 3:1
SLOPE WITH SPILL AROUND
AS SHOWN AT WINGS)



SECTION H-H



SECTION C-C
BERM RIP RAPPED
@ END BENT 1



SECTION C-C
BERM RIP RAPPED
@ END BENT 2

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

DRAWN BY : J. PENDERGRAFT DATE : 8-22
CHECKED BY : J. DILWORTH DATE : 8-22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

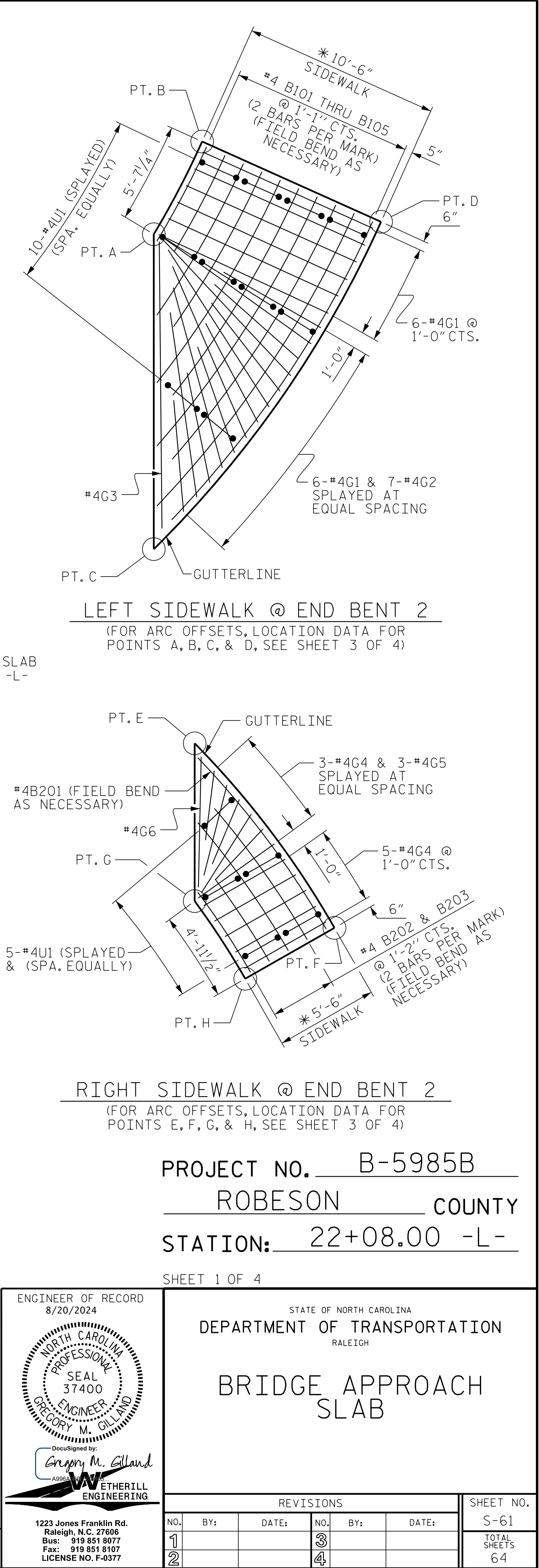
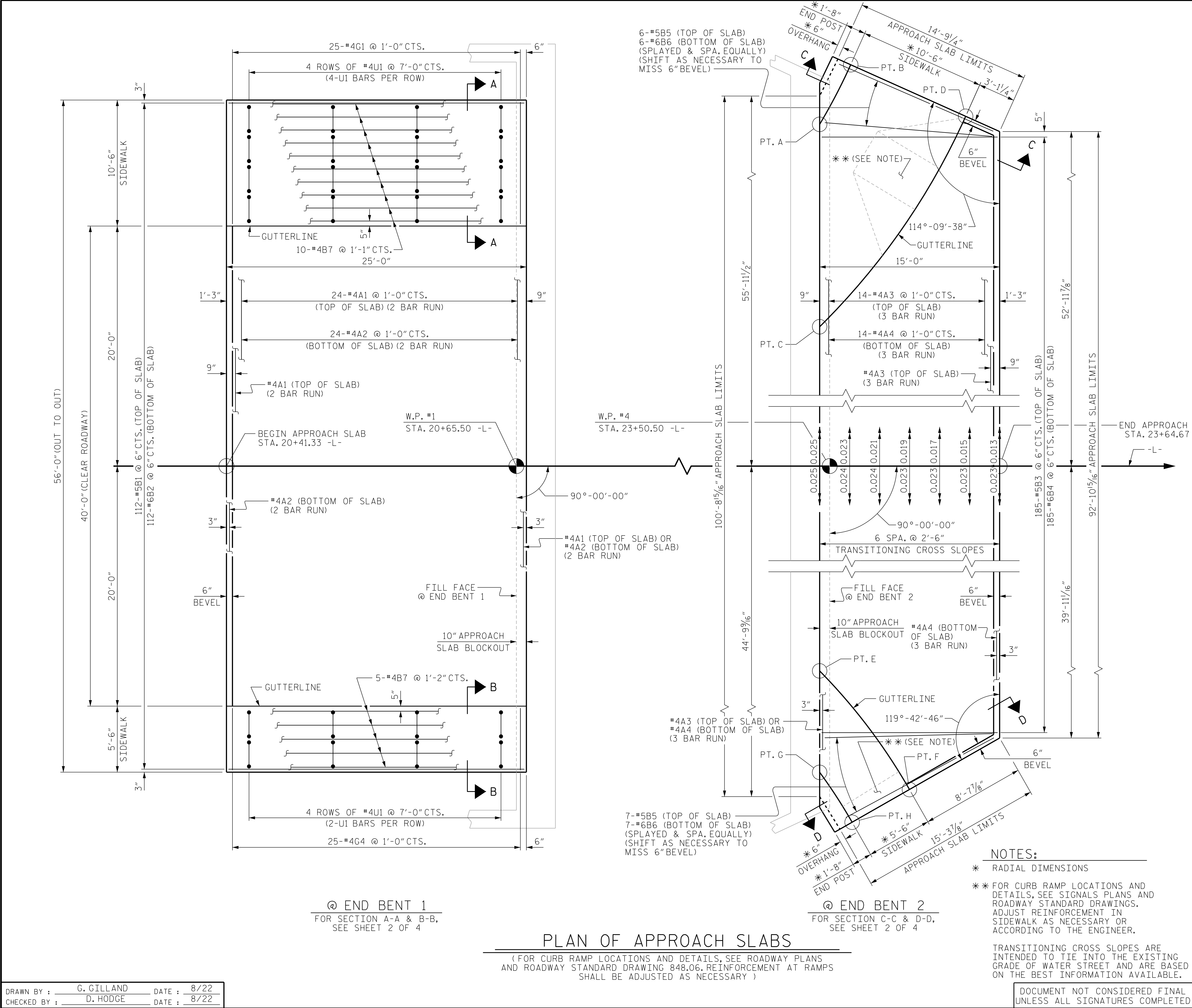
Gregory M. Gilland
V. ETHERILL
ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

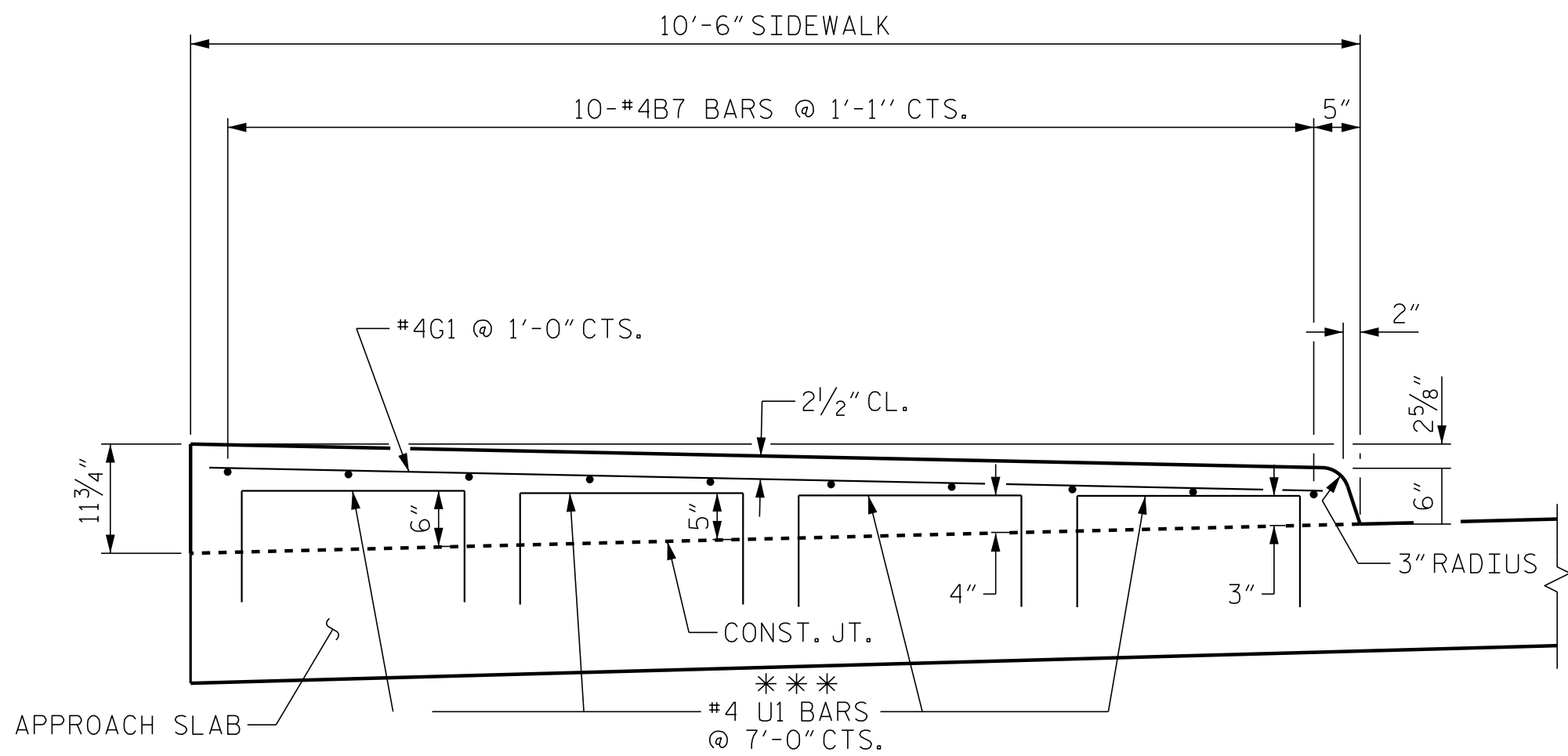
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

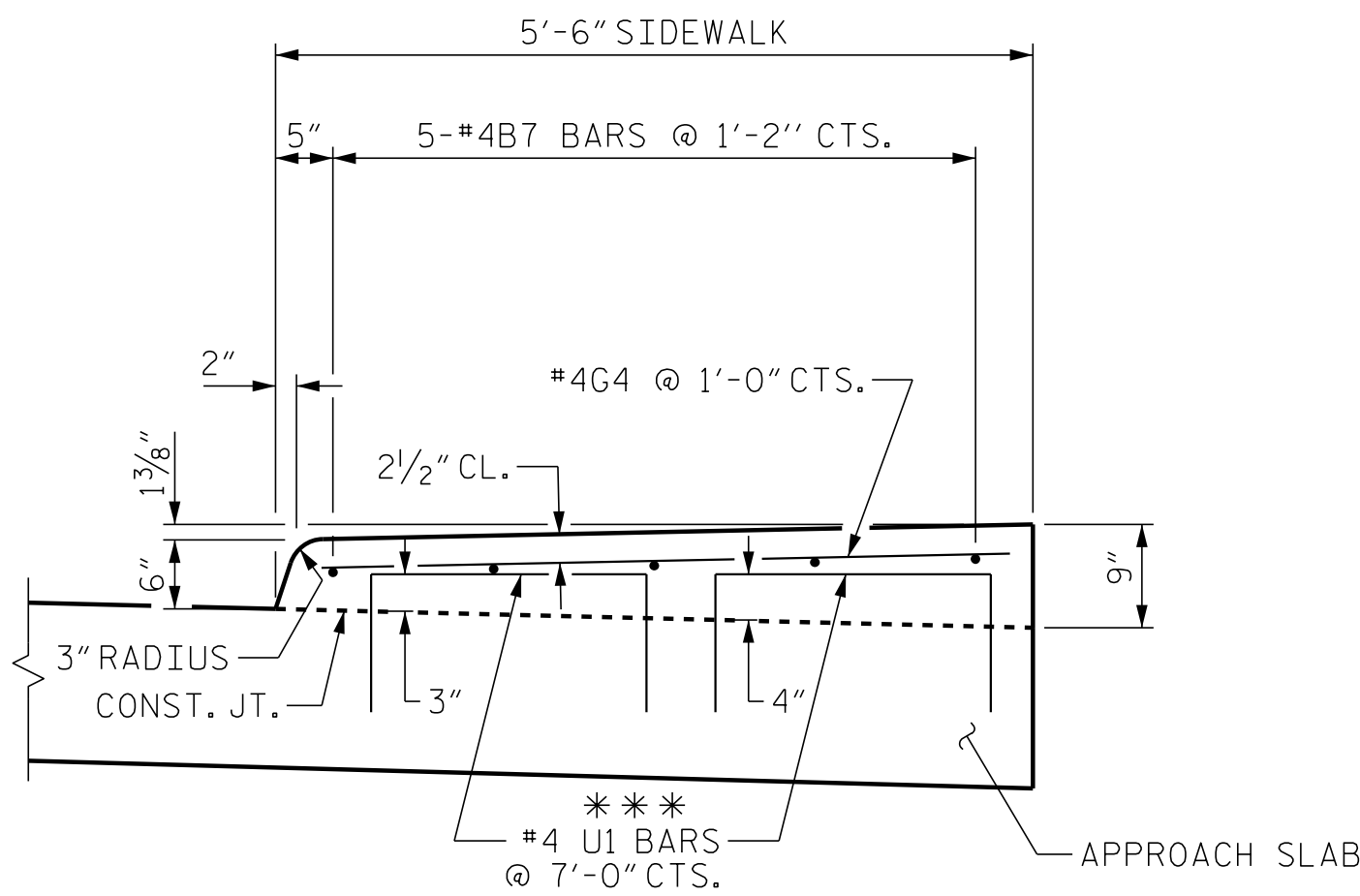
REVISIONS						SHEET NO. S-60
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 64
2			4			

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402-001 B-5985-SITE 2 770175_SKU_AS.dgn 4/26/2024 9:53:55 AM

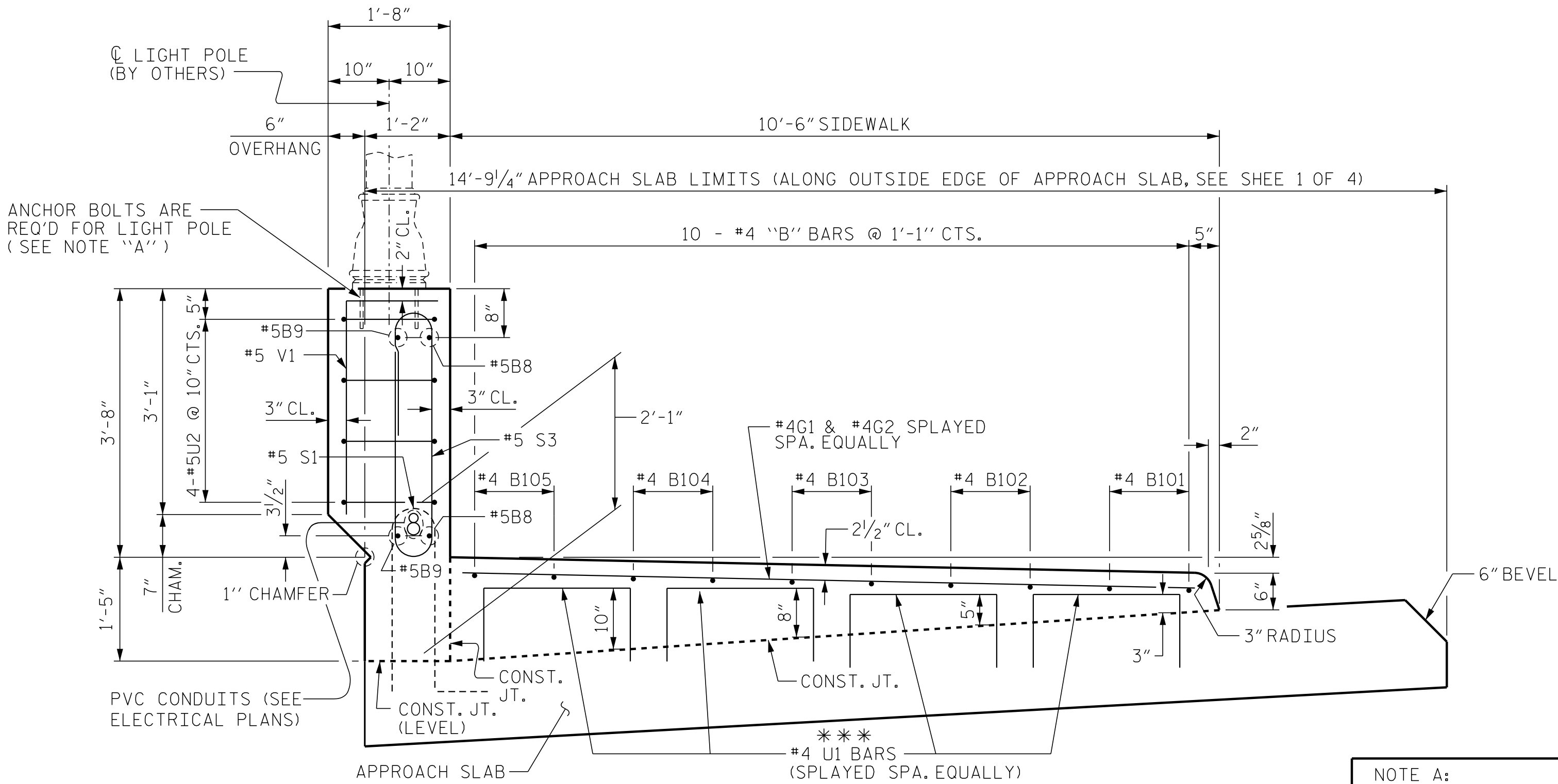




SECTION A-A



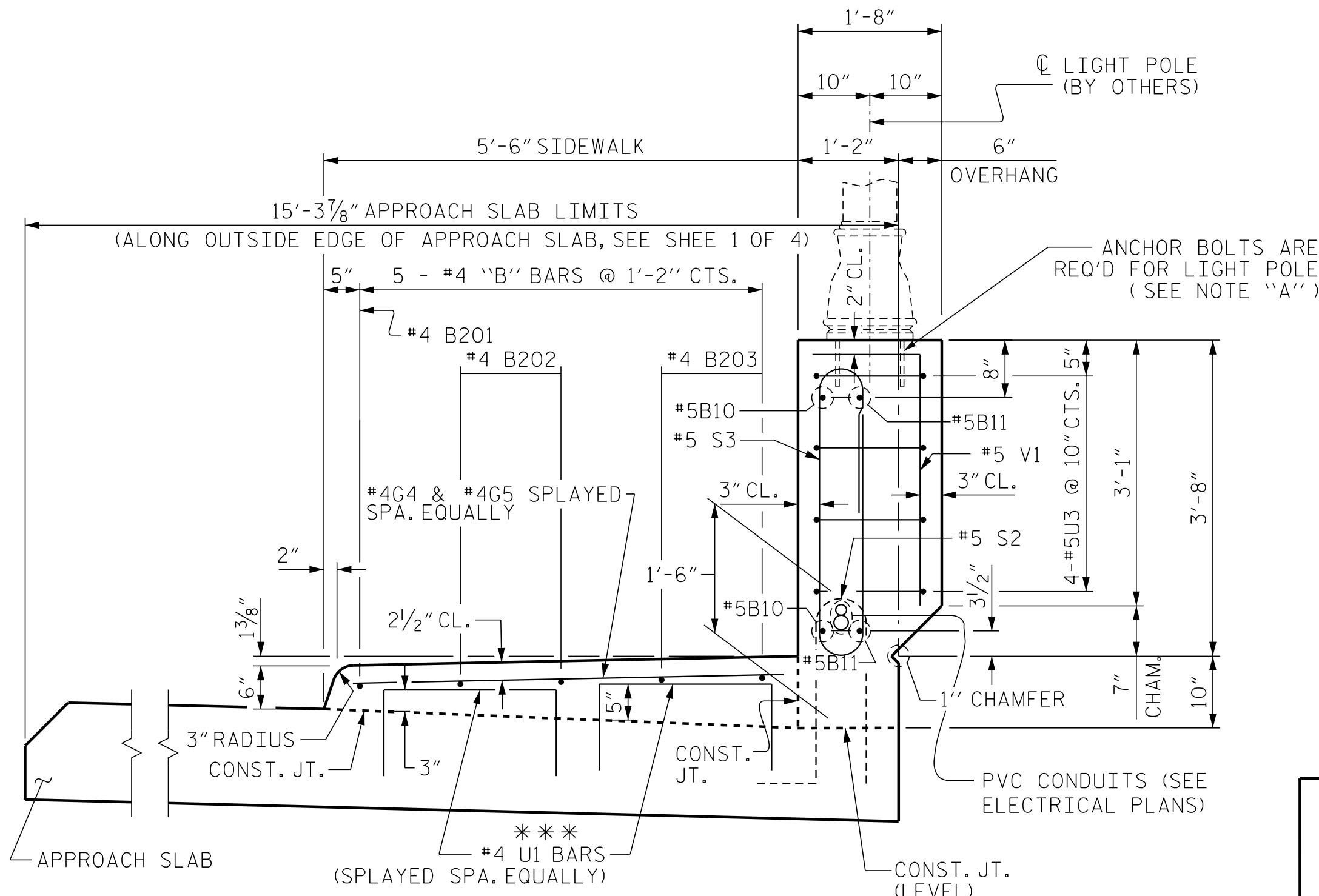
SECTION B-B



SECTION C-C

NOTE A:
COORDINATE WITH CITY OF LUMBERTON FOR
INSTALLATION OF ANCHOR BOLTS. ANCHOR BOLT
SIZE & LOCATION ARE TO BE AS SPECIFIED BY
LIGHT POLE MANUFACTURER.

*** #4U1 BARS MAY BE PUSHED INTO GREEN
CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.



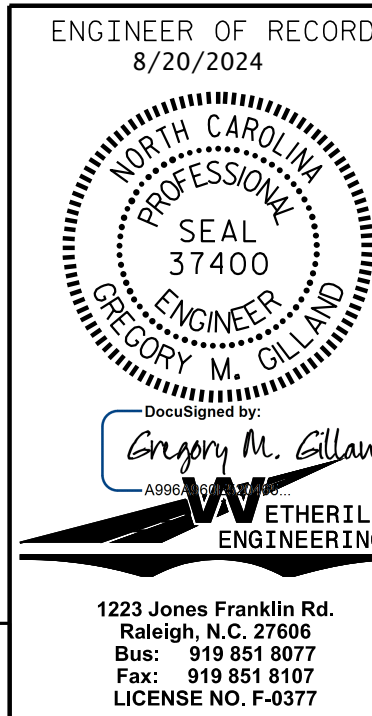
SECTION D-D

PROJECT NO. B-5985B

ROBESON COUNTY

STATION: 22+08.00 -L-

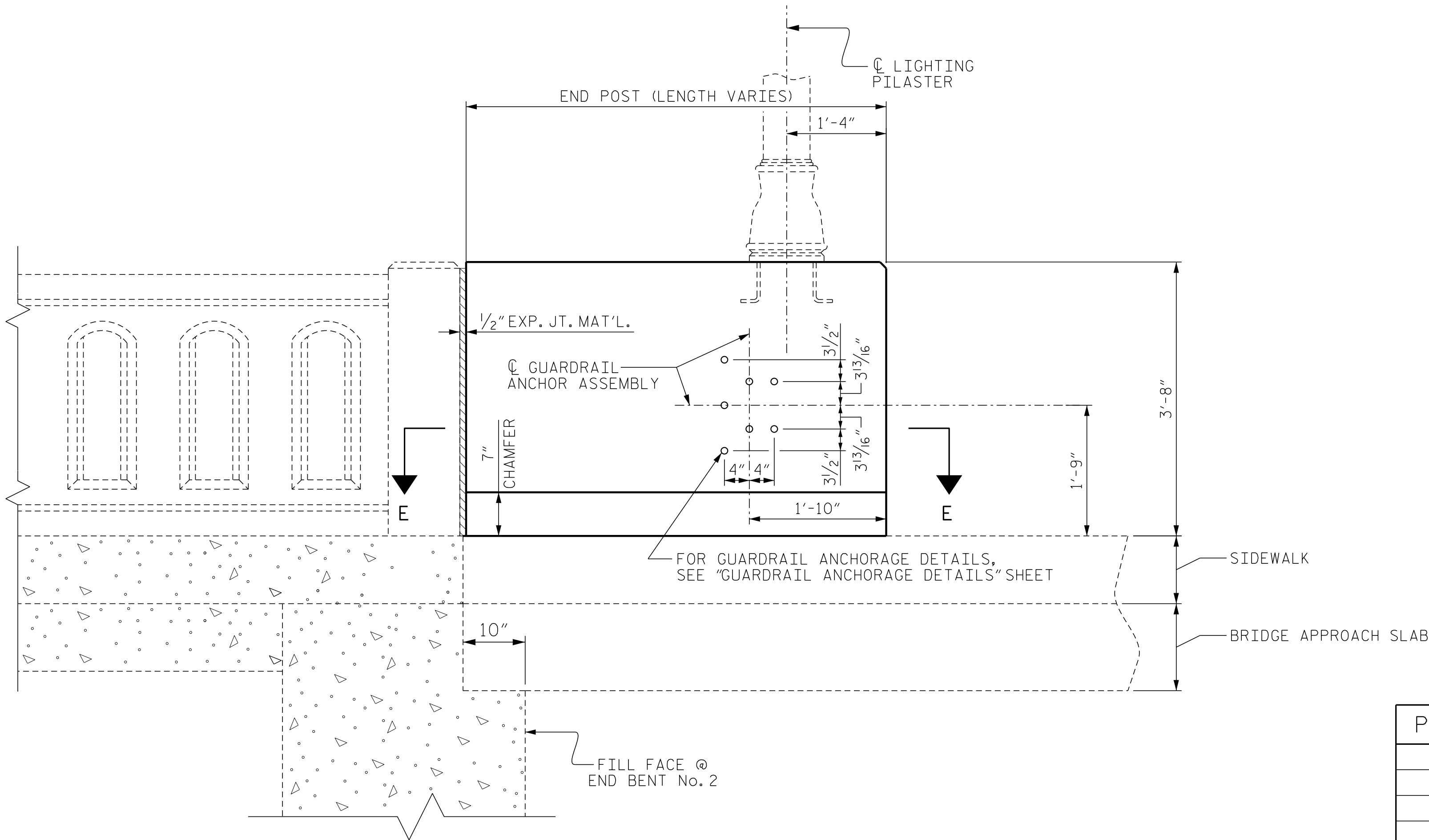
SHEET 2 OF 4



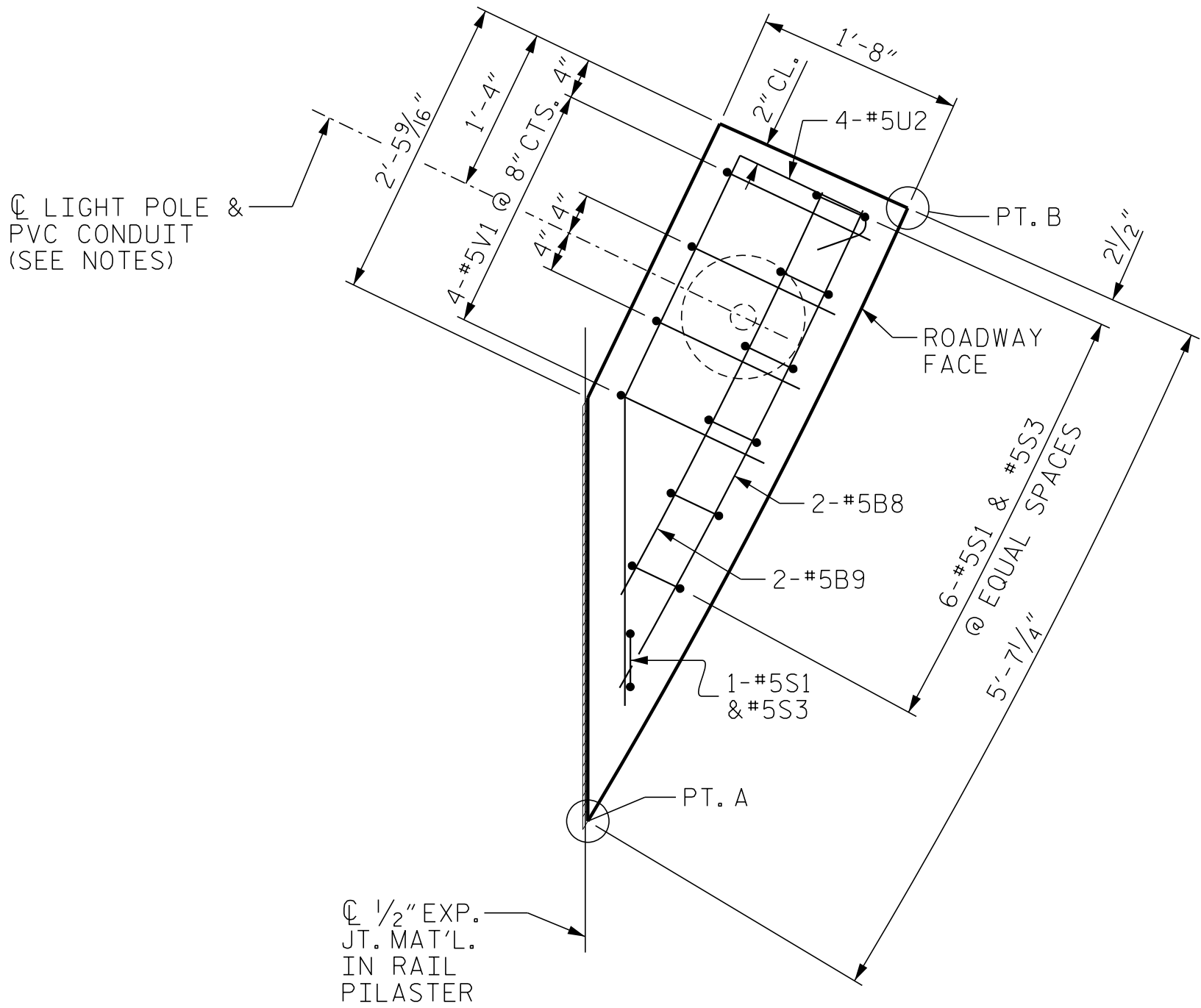
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-62
2			4			
TOTAL SHEETS						64

DRAWN BY : G. GILLAND DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

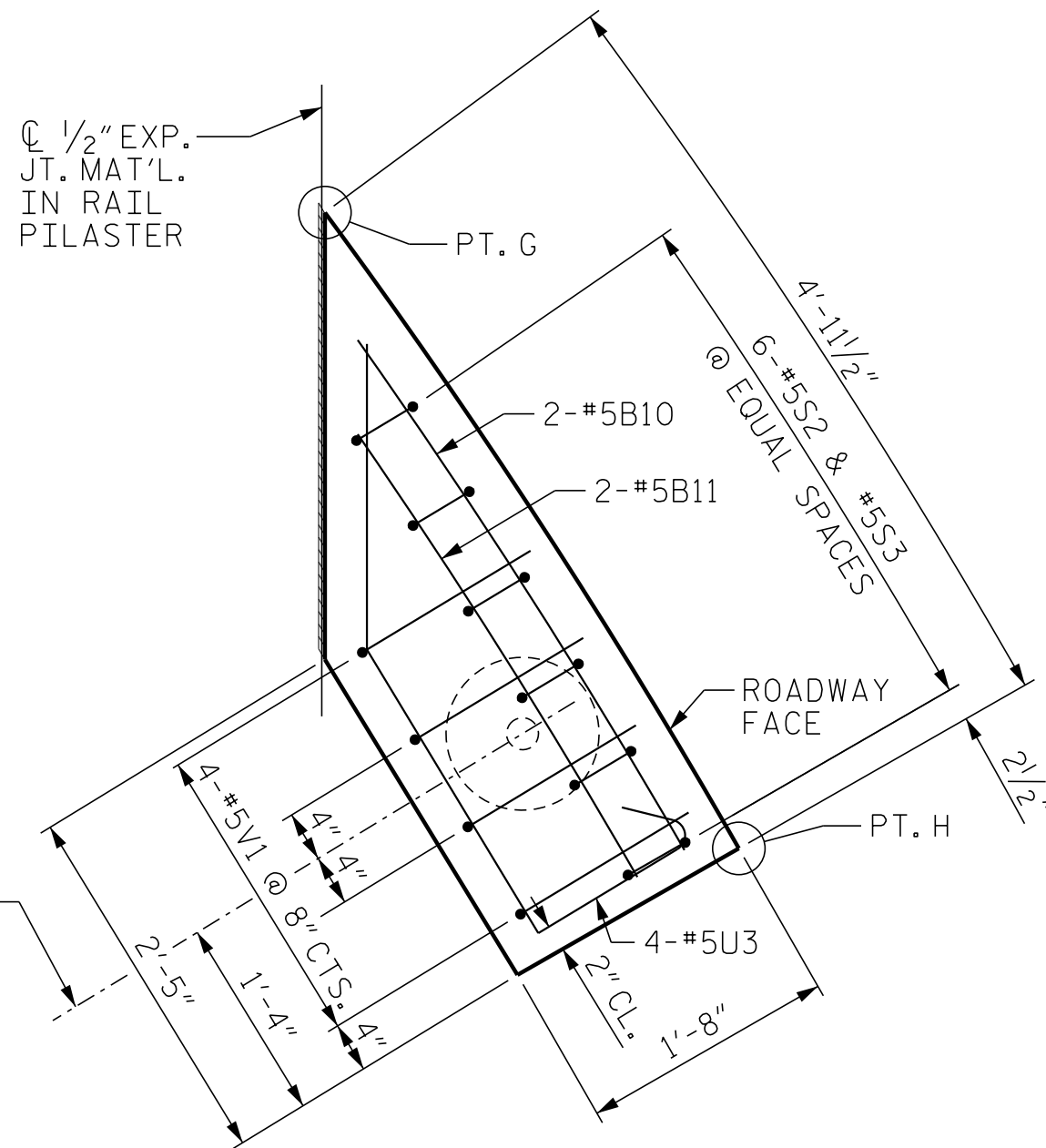
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



ROADWAY ELEVATION OF RAIL AT END BENT 2



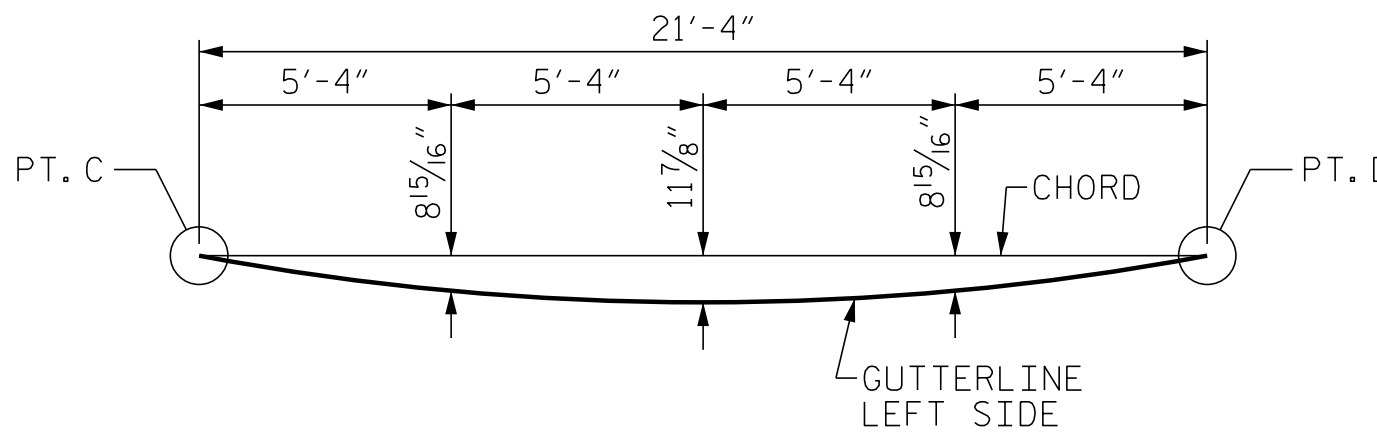
LEFT END POST



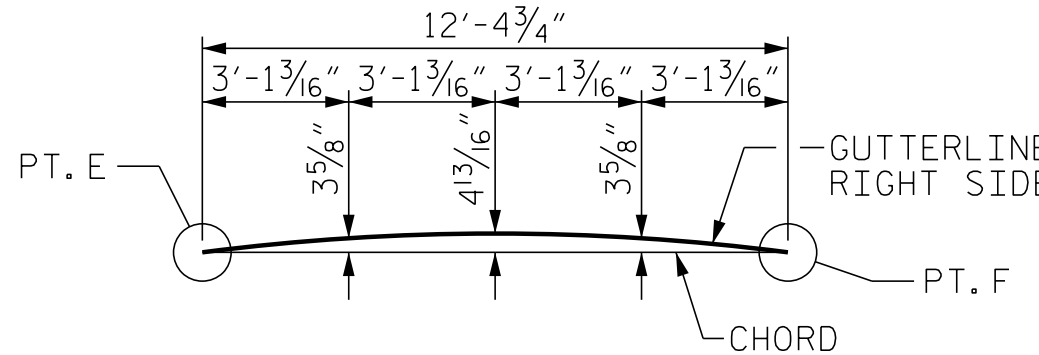
RIGHT END POST

END POST DETAILS - SECTION E-E

SHIFT "S" BARS AS NECESSARY TO MISS 1/4" Ø HOLES FOR GUARDRAIL ANCHORAGE



SIDEWALK GUTTERLINE (LEFT SIDE)

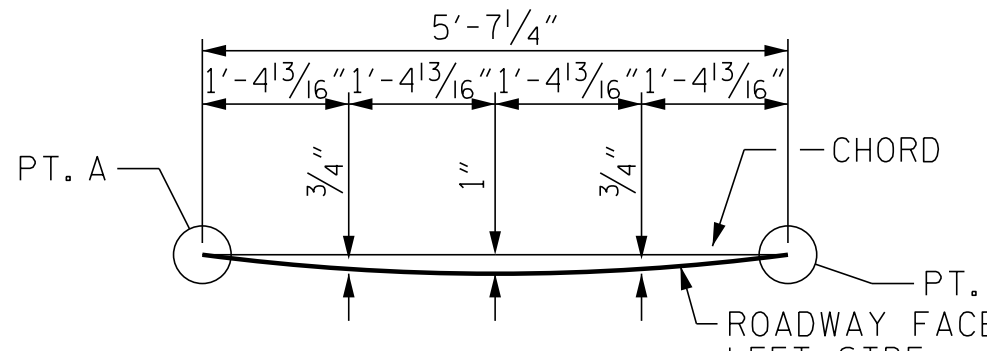


SIDEWALK GUTTERLINE (RIGHT SIDE)

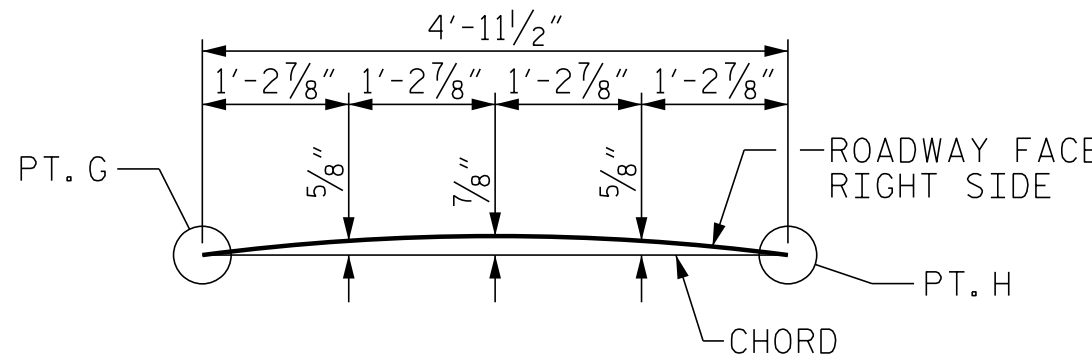
ARC OFFSETS - ALONG GUTTERLINE

SEE SHEET 1 OF 4 FOR POINTS C, D, E & F

POINT	STATION	OFFSET
A	23+49.67 -L-	53.59' LT.
B	23+52.26 -L-	58.56' LT.
C	23+49.67 -L-	36.73' LT.
D	23+61.84 -L-	54.26' LT.
E	23+49.67 -L-	34.32' RT.
F	23+57.15 -L-	44.21' RT.
G	23+49.67 -L-	42.78' RT.
H	23+52.37 -L-	46.93' RT.



ROADWAY FACE OF END POST (LEFT SIDE)



ROADWAY FACE OF END POST (RIGHT SIDE)

ARC OFFSETS - ALONG END POST

SEE SHEET 1 OF 4 FOR POINTS A, B, G & H

NOTES:

FOR CONDUIT DETAILS, SEE ELECTRICAL PLANS.

ANCHOR BOLTS FOR LIGHT POLES ARE REQUIRED IN LIGHTING PILASTER. COORDINATE WITH CITY OF LUMBERTON TO INSTALL ANCHOR BOLTS ACCORDING TO POLE MANUFACTURER SPECIFICATIONS.

PROJECT NO. B-5985B
ROBESON COUNTY
STATION: 22+08.00 -L-

SHEET 3 OF 4

DRAWN BY : G. GILLAND DATE : 8/22
CHECKED BY : D. HODGE DATE : 8/22

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD
8/20/2024

NORTH CAROLINA
PROFESSIONAL
SEAL
37400

DocuSigned by:
Gregory M. Gilland
Associate
ETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

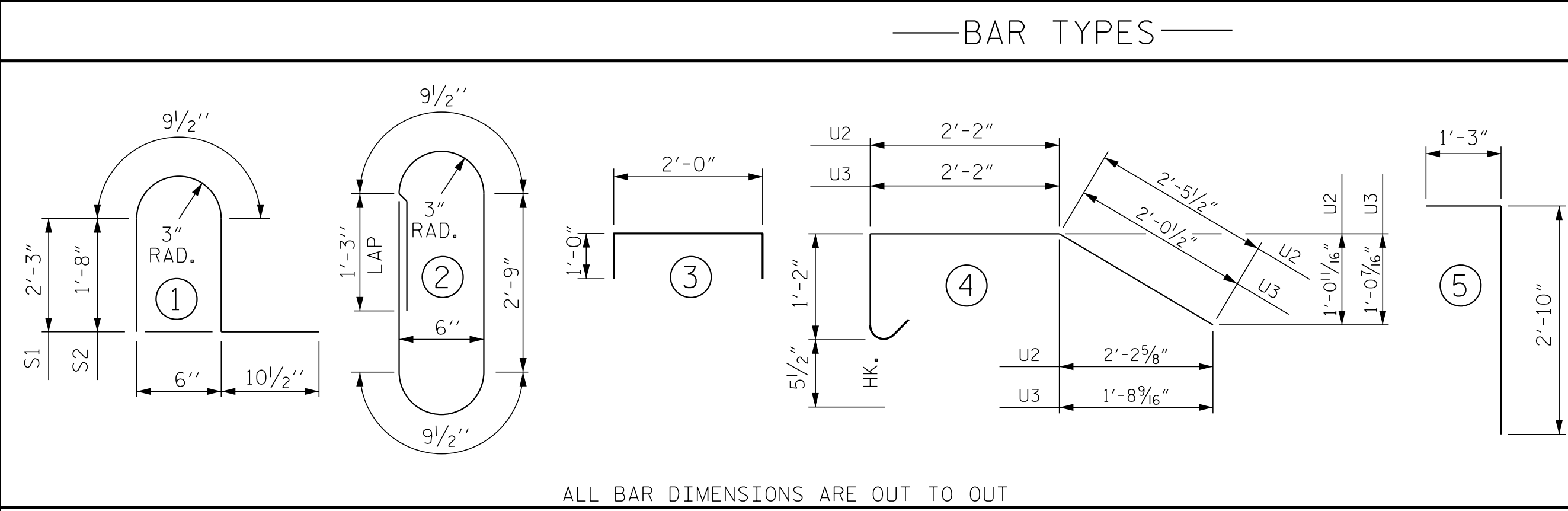
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB
END POST DETAILS &
ARC OFFSETS

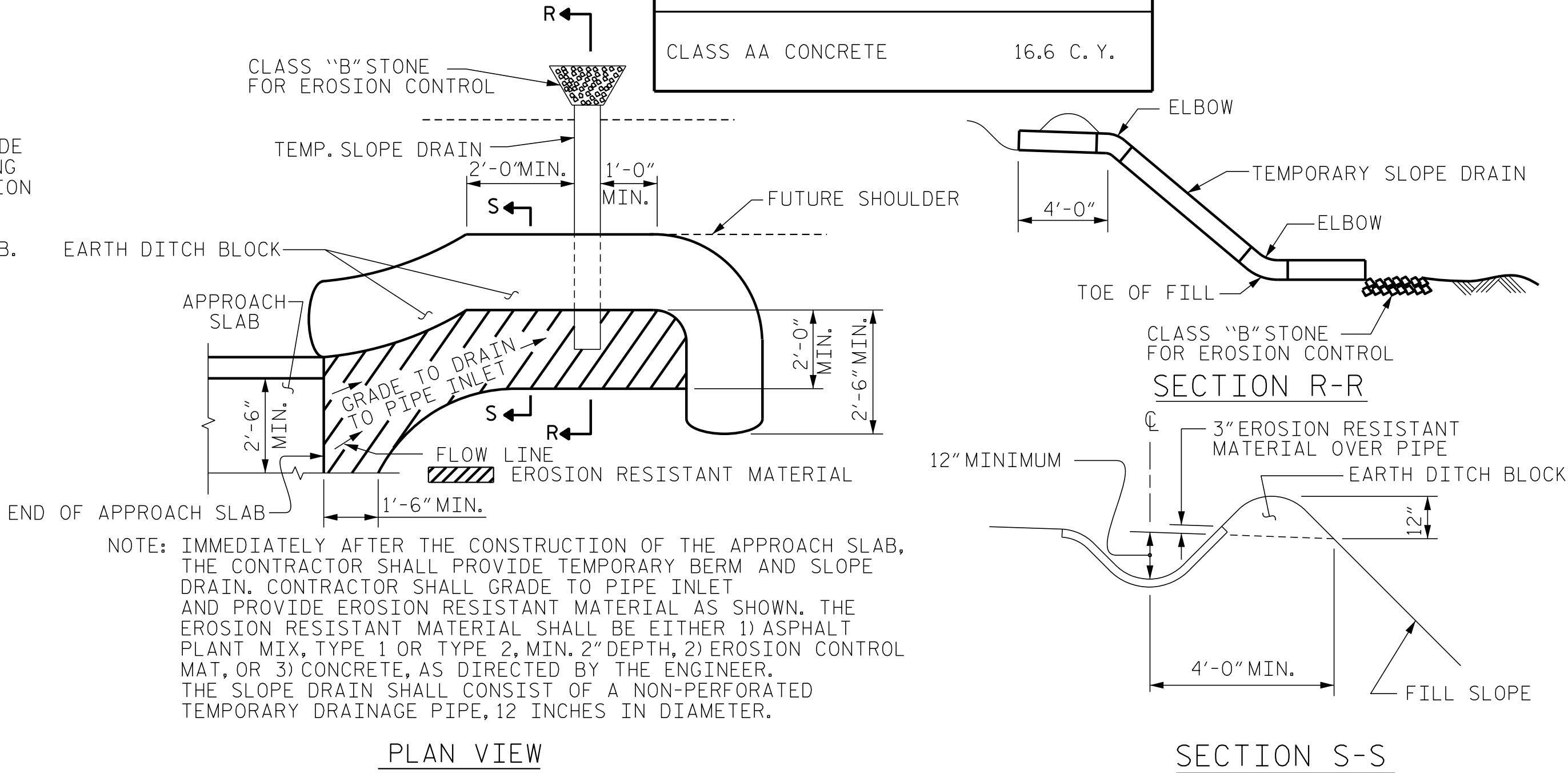
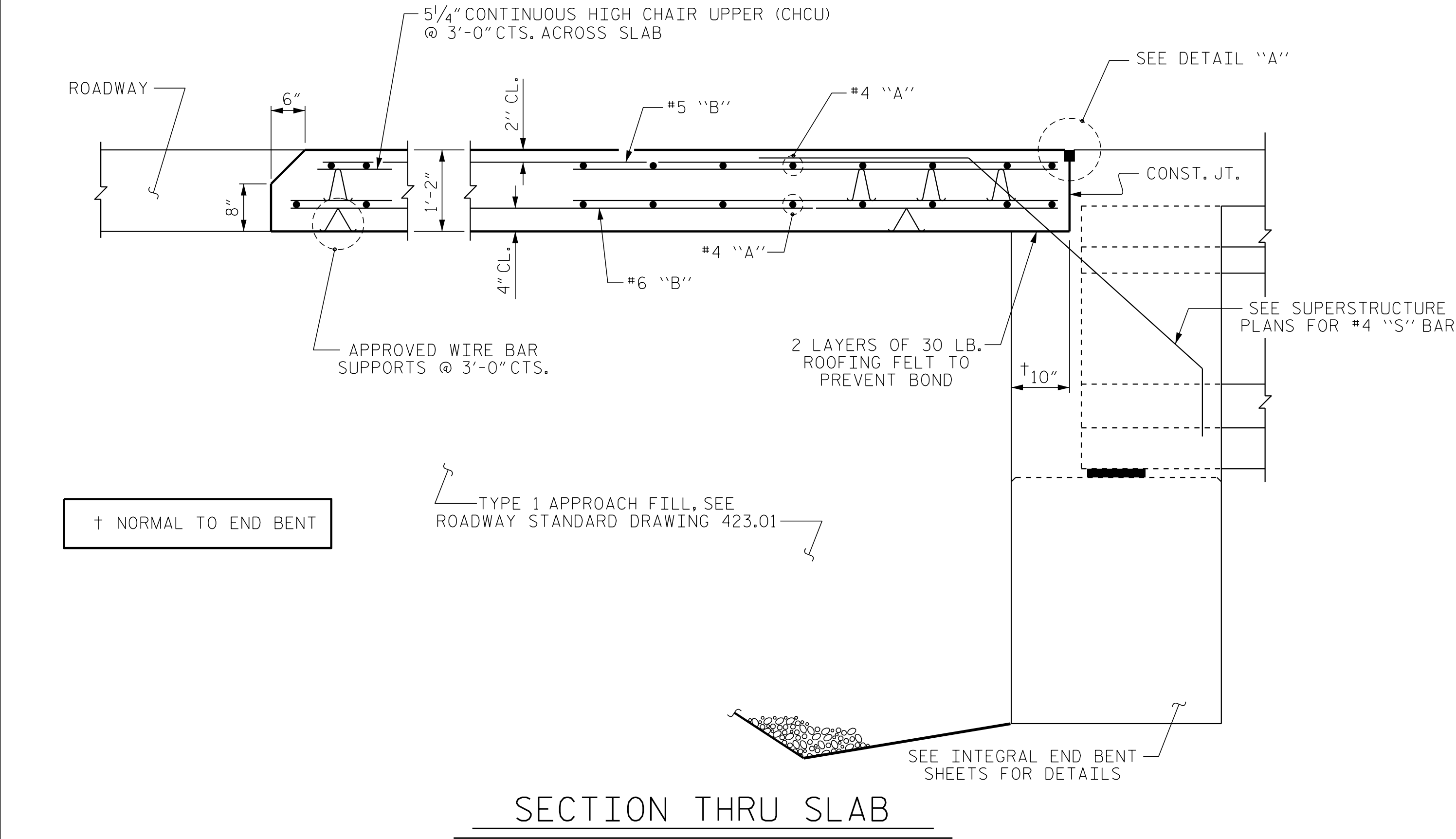
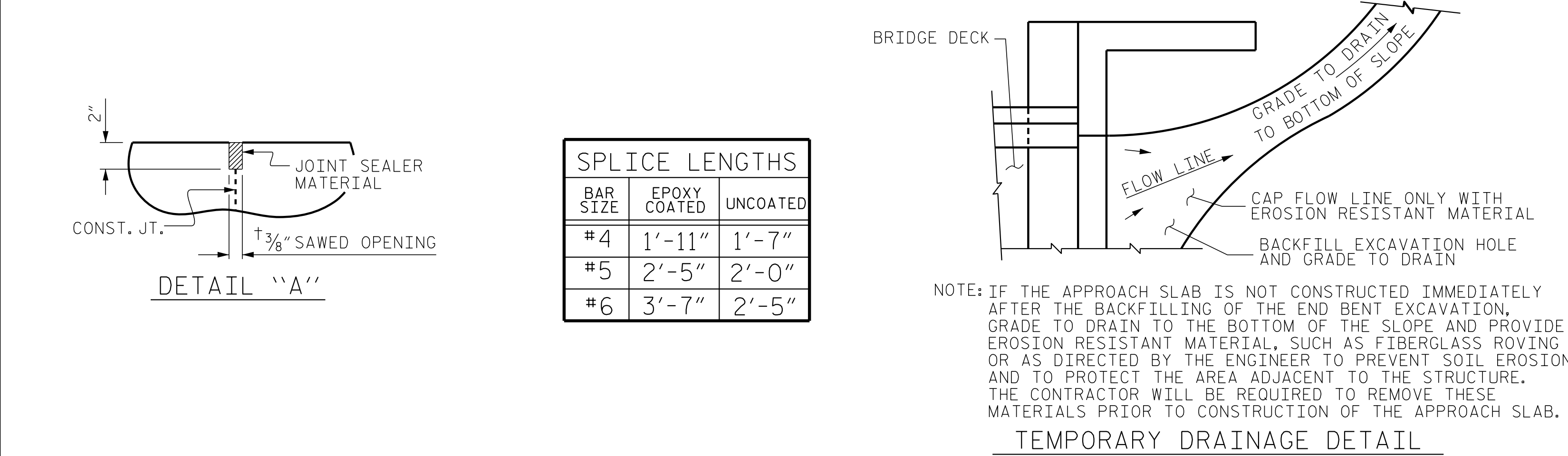
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-63
TOTAL SHEETS
64

P:\2018\18156.01 B-5985 RobesonStructures\Str-2 (770175)NDGN\402-001 B-5985-SITE 2 770175_SKU_AS.dgn 4/26/2024 9:56:01 AM



BILL OF MATERIAL															
FOR APPROACH SLAB @ END BENT 1						FOR APPROACH SLAB @ END BENT 2						FOR (4) SIDEWALKS			
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE
* A1	52	#4	STR	28'-10"	1,002	* A3	48	#4	STR	36'-8"	1,176	* B7	15	#4	STR
A2	52	#4	STR	28'-8"	996	A4	48	#4	STR	36'-5"	1,168				
* B1	112	#5	STR	24'-2"	2,823	* B3	185	#5	STR	14'-2"	2,734	* B101	2	#4	STR
B2	112	#6	STR	24'-8"	4,150	B4	185	#6	STR	14'-8"	4,075	* B102	2	#4	STR
						* B5	13	#5	STR	14'-0"	190	* B103	2	#4	STR
						B6	13	#6	STR	14'-0"	273	* B104	2	#4	STR
												* B105	2	#4	STR
REINFORCING STEEL					LBS. 5,146	REINFORCING STEEL					LBS. 5,516	* B201	1	#4	STR
* EPOXY COATED REINFORCING STEEL					LBS. 3,825	* EPOXY COATED REINFORCING STEEL					LBS. 4,100	* B202	2	#4	STR
CLASS AA CONCRETE					60.3 C. Y.	CLASS AA CONCRETE					64.4 C. Y.	* B203	2	#4	STR
												* G1	37	#4	STR
												* G2	7	#4	STR
												* G3	1	#4	STR
												* G4	33	#4	STR
												* G5	3	#4	STR
												* G6	1	#4	STR
												* U1	39	#4	3
												* EPOXY COATED REINFORCING STEEL			
												LBS. 868			
												CLASS AA CONCRETE			
												16.6 C. Y.			



NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AT END BENT 1 AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE 1A - ALTERNATE APPROACH FILL" (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL".

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : G. GILLAND	DATE : 4/24
CHECKED BY : D. HODGE	DATE : 4/24
DRAWN BY : TLA 10/05	REV. 12/17 MAA/THC
CHECKED BY : GM 5/06	REV. 06/19 BNB/THC
	REV. 07/23 BNB/SNM

ENGINEER OF RECORD 8/20/2024		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
NORTH CAROLINA PROFESSIONAL SEAL 37400 ENGINEER GREGORY M. GILLAND		STANDARD BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		REVISIONS	
NO.		BY:	
1		3	
2		4	
DATE:		DATE:	
SHEET NO.		S-64	
TOTAL SHEETS		64	

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	- -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	- -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	- -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	- - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	- - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.